

# JOURNAL

OF THE

## AMERICAN VETERINARY MEDICAL ASSOCIATION

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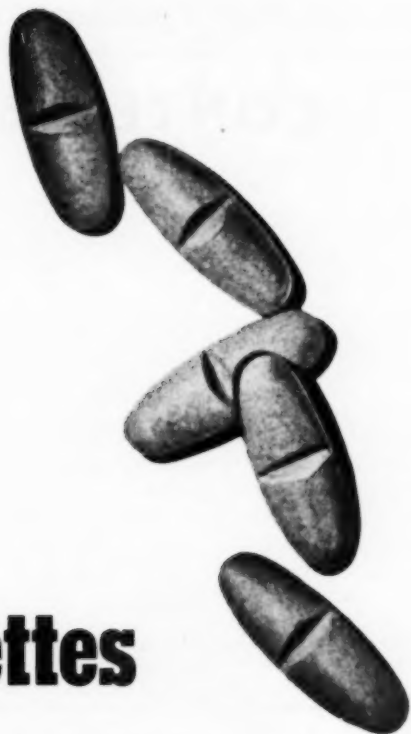
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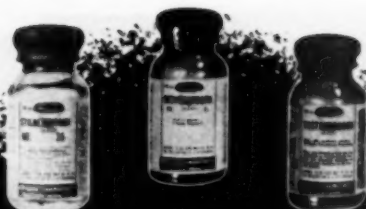
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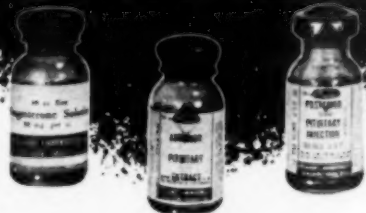
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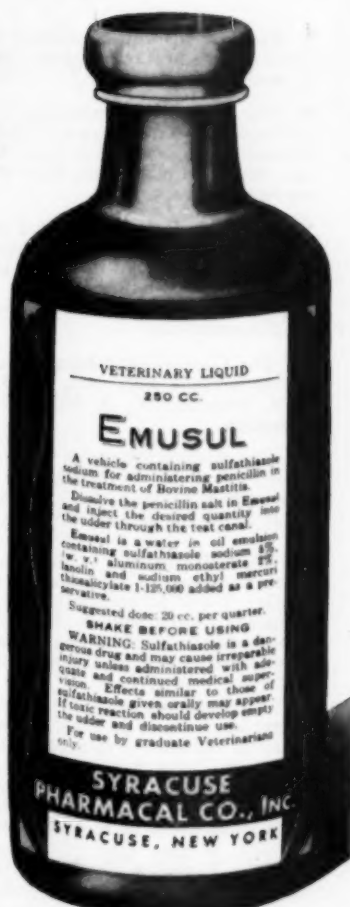
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◆ The last week in November was the usual busy one for several of the Association's boards and committees. Among those which met at the headquarters office were the following.

◆ The Executive Committee (Drs. W. A. Aitken, James Farquharson, and R. E. Rebrassier) of the Council on Education met with representatives of the American Medical Association, American Dental Association, and the Association of American Medical Colleges on Nov. 23, 1951, to discuss their respective duties in accreditation work.

◆ Dr. R. E. Rebrassier, head of the Department of Parasitology, College of Veterinary Medicine, The Ohio State University, Columbus, was recently elected by the Executive Board to fill the unexpired term of Dr. W. A. Hagan on the Council on Education, ending in 1952. Dr. Hagan resigned from the Council effective Sept. 1, 1951. Dr. Rebrassier was elected secretary of the Council at its meeting on November 24.

◆ The Council on Education held its regular winter meeting on November 24. Those present were Drs. W. A. Aitken, James Farquharson, R. E. Rebrassier, I. B. Boughton, G. A. Edge, S. W. Haigler, C. C. Hastings, and Lt. Col. W. E. Jennings.

◆ The Research Council was in session on November 25. The members present were: Drs. M. A. Emmerson, chairman, L. E. St. Clair, secretary, T. J. Jones, James Farquharson, A. G. Danks, L. M. Roderick, D. K. Detweiler, C. A. Brandly, C. P. Zepp, Sr., and C. F. Schlotthauer.

◆ Plans for adding to the funds available for the work of the Research Council were discussed at a meeting of the Research Fund-Raising Committee on Nov. 26, 1951. Those attending included Drs. C. P. Zepp, Sr., chairman, W. G. Brock, James Farquharson, A. H. Quin, C. F. Schlotthauer; also Executive Secretary Hardenbergh and Assistant Executive Secretary Van Houweling of the AVMA staff were present at the meeting.

◆ A joint conference of the Committee on Therapeutic Agents, Subcommittee on Veterinary Items of the National Formulary, and representatives of the pharmaceutical industry was held on Nov. 27, 1951, to discuss the project of publishing the book "Accepted Veterinary Therapeutic Agents," which the committee has had under way for the past two years. AVMA committee members present included Drs. Roger P. Link, D. K. Detweiler, L. A. Gendreau, L. Meyer Jones, C. D. Van Houweling, B. V. Alfredson, F. J. Kingma, and H. J. Milks.

◆ The Board of Governors (Drs. Brock, Wells, and Boyd) were in session on Nov. 28, 1951, and the Executive Board held its regular winter meeting on November 29. Members of the latter Board present were Drs. S. F. Scheidy, O. Norling-Christensen, R. S. Sugg, C. F. Schlotthauer, J. M. Arburua, E. E. Wegner, Edwin Laitinen, and W. R. Krill. The members of the Board of Governors were also present at the Executive Board meeting, as ex officio members.

◆ The Executive Board approved Association support of the Ives amendment to the new tax plan which is expected to come before the next session of Congress (see the December JOURNAL, pp. 464-465). This is of great interest and significance to self-employed persons who do not come under social security, and all practitioner members are urged to study it.

◆ President John R. Wells, chairman ex officio of the Committee on Awards, invites nominations for the awards administered by the AVMA and to be presented at the annual convention in 1952.

Members should consult pp. 32 and 33 of the 1950 AVMA directory for information about the Twelfth International Veterinary Congress Prize, the AVMA Award, and the Borden Award and Medal, nominations for which may be submitted.

Nominations should be addressed (before March 1, 1952) to: Dr. John R. Wells, Chairman, AVMA Committee on Awards, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., and should be accompanied by statements setting forth the qualifications of persons nominated for the respective awards.



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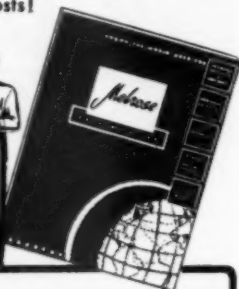
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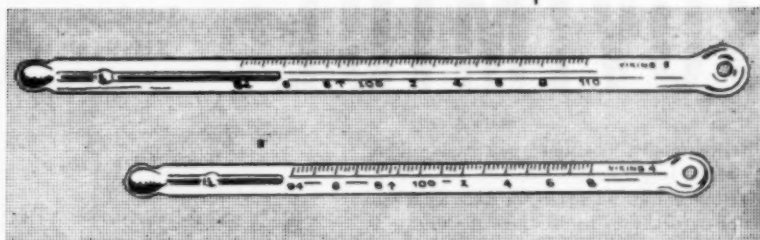




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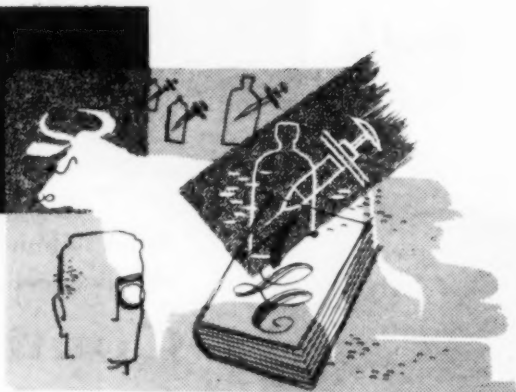
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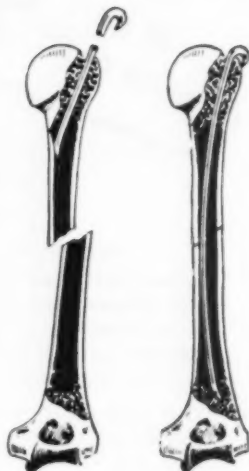
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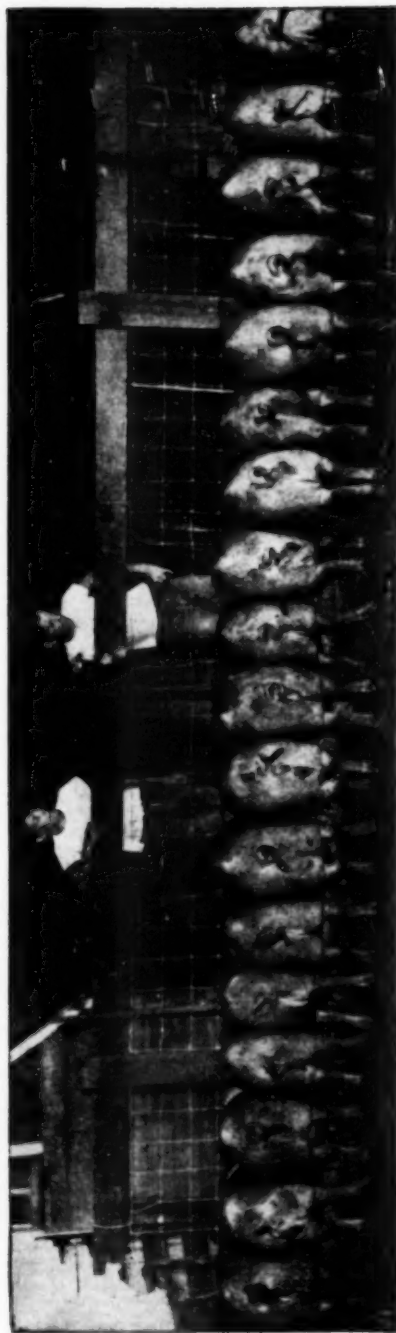
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## A Milk Plate Test for the Detection of Brucellosis

GRANT E. BLAKE, D.V.M.; C. A. MANTHEI, D.V.M.; E. R. GOODE, Jr., D.V.M.

Beltsville, Maryland

SINCE THE introduction of the milk ring test (ABR) by Fleischhauer<sup>6</sup> in 1937, there has been a large volume of research on methods of improving and adapting the test for use under field conditions. Investigators in Denmark and Sweden<sup>3,4,5,8,10,11</sup> succeeded in developing the test to its present level of sensitivity. It has been used in those countries for routine checking of certified *Brucella*-free herds and areas as well as for detecting infected herds in the eradication program. The subsequent development of the vital-stained antigens by Bendtsen<sup>1,2</sup> and Wood<sup>12</sup> has not changed this picture. Roepke<sup>9</sup> and associates adapted the test to cream samples and in this way increased its range of usefulness for field examinations.

The need for further adaptation of the test has long been felt. This need becomes evident when the limitations of the present methods are reviewed. The test is reported to be unsatisfactory on goat's milk, milk from cows in the early or late stages of lactation, homogenized milk, sour milk, skimmilk without the addition of negative<sup>\*</sup> cream, and cream without the addition of a suitable diluent. Also, the fact that about one-half of all the blood serum samples tested by brucellosis are tested by the rapid plate method further necessitates research which will enable the laboratories to

use their present equipment more economically.

In view of these facts, research was begun on the use of the rapid plate test of milk for enlarging the scope of diagnosing brucellosis.

### METHODS OF PROCEDURE

To ascertain the most desirable density for the milk plate test antigen, varying concentrations of *Brucella abortus* organisms were studied. These were prepared merely by diluting the BAI milk ring test antigen with saline solution or by concentration of the cells by centrifugation. Antigens prepared with cell concentrations of 3, 5, 7, and 9 per cent were tested on 69 samples of undiluted and diluted whole milk from *Brucella*-reacting cows. Dilutions of 1:5 to 1:640 were made with negative milk.

The milk plate test was conducted by placing 0.08 ml. of milk on the test plate and applying 0.03 ml. of antigen with a calibrated dropper, as is customary in regular plate agglutination work. Observations were made on 60 milk samples at various intervals to determine the time at which a constant state of agglutination occurs at room temperature.

Reactions, as indicated in figure 1, are designated according to the degree of agglutination, as follows:

Negative—no agglutination present.

1+—very slight agglutination, usually the amount that could be detected up to 25 per cent.

2+—easily detectable agglutination, approximately 50 per cent.

3+—approximately 75 per cent agglutination.

4+—approximately 100 per cent agglutination.

To determine the efficacy of the milk plate test, experiments were conducted on the milk from both cattle and goats. In the first part of this

From the Animal Disease Station of the Pathological Division, Bureau of Animal Industry, Beltsville, Md.

The authors express appreciation to Drs. O. L. Lockwood and W. H. Wiauwel of the Baltimore office of the Brucellosis and Tuberculosis Eradication Division, for their assistance in obtaining milk samples from goats.

\*The terms "negative milk" and "negative cream" refer to products containing no *Brucella* agglutinins. The terms "positive milk" and "positive cream" refer to products containing *Brucella* agglutinins.

study, 61 head of cattle were involved. These cattle comprised the following groups:

Noninfected (unexposed) (12 animals)	Not vaccinated, noninfected and unexposed to brucellosis.
Noninfected (exposed) (3 animals)	Not vaccinated, noninfected, but exposed by contact to brucellosis.
Calves vaccinated (4 animals)	Vaccinated at 4 to 8 months with subsequent contact exposure, but withstanding infection.
Adults vaccinated (17 animals)	Vaccinated as adults with subsequent contact exposure and withstanding infection, but maintaining reactor or suspicious blood titers.
Nonreactor ceased shedders (2 animals)	Previously infected but having ceased to shed <i>Brucella</i> organisms, and whose blood titers have reverted to suspicious or negative.
Reactor ceased shedders (5 animals)	Previously infected but having ceased shedding <i>Brucella</i> organisms, but whose blood titers remain in the reactor category.
Reactor infected shedders (18 animals)	Infected and shedding <i>Brucella</i> organisms.

Complete histories were available on each animal. Current brucellosis status was established by the serological, bacteriological, and biological findings at the time of the last parturition and on subsequent milk and blood samples. Blood and composite quarter samples were collected at varying intervals for approximately one year. Thirteen animals received one to four examinations, 10 received five to 14, and 38 received 15 to 20. Blood was tested by both plate and tube methods

in dilutions of 1:25 and above. The whole milk was tested by the conventional milk ring test and also by the milk plate test.

The second phase of this study involved the testing of goat's milk. Milk samples were collected from 122 goats in four herds. These samples were individually tested by the whey-agglutination test, conventional milk ring test, and the milk plate test. No blood samples were taken at the time of testing. However, all herds were negative on previous serum-agglutination tests.

The testing of skimmilk, sour milk, milk with high cream content, homogenized milk, and cream samples was carried on incidentally to the above tests.

#### RESULTS

Figure 2 shows the effect of cell concentration on the percentage of agglutination obtained on 69 undiluted and diluted milk samples from positive reacting cattle. The antigen selected as being the most satisfactory was the one containing a 3-per cent cell concentration. This was selected because it appeared to be slightly more sensitive than the others as indicated in figure 2. Of the four antigens tested, the one containing 3-per cent cells compared more favorably with the milk ring antigen. Furthermore, low titer reactions were more easily distinguishable.

The time required for constant agglutination to occur at room temperature is shown in figure 3. Twelve minutes was selected as the ideal time for reading samples. Although 3.4 per cent of the samples showed an increase in the agglutination reaction after this time, interpretation of the results was not affected, since changes occurred only in samples showing a 3+ reaction.

TABLE 1—Average Percentage of Efficiency of the Milk Plate and Milk Ring Tests in Ascertaining the Brucellosis Status of Seven Groups of Cattle

Cattle group	Negative		1+		2+		3+		4+		Bact. exam.	Average ser. aggl. titer
	milk plate	milk ring	milk plate	milk ring	milk plate	milk ring	milk plate	milk ring	milk plate	milk ring		
Noninfected (unexposed)	100.0	100.0										Neg. 1:25
Noninfected (exposed)	79.1	100.0	20.9								Neg.	Neg. 1:25
Calves Vaccinated	84.2	71.9	13.9			5.8	1.9	22.3			Neg.	Neg. 1:25
Adults Vaccinated	58.8	52.6	15.5	23.5	7.9	10.7	6.8	8.3	11.0	4.9	Neg.	1:216
Nonreactor ceased shedders	50.0	53.4		4.3		15.4	22.2	23.0	27.8	3.9	Neg.	1:39
Reactor ceased shedders	2.5	4.7	4.9	17.4	20.3	40.8	20.3	28.0	52.0	9.1	Neg.	1:138
Reactor infected shedders	0.3	0.9		0.5	0.7	9.9	10.7	36.5	88.3	52.2	Pos.	1:1401

Bact. exam. = bacteriological examination of blood, uterine material, and colostrum at the last parturition, and subsequently of periodic collections of milk for the presence of *Brucella abortus*; Neg. = negative; Pos. = positive; Average ser. aggl. titer = average serum agglutination titer.



Table 1 shows the average percentage of efficiency of the milk plate and milk ring tests in ascertaining the brucellosis status of seven groups of cattle. The brucellosis status of each group was established by bacteriological and serological examinations as indicated in the last two columns of the table.

As the study progressed, it was evident

The nonreactor ceased shedder group consisted of only 2 animals. One showed only negative and 1+ reactions, whereas the other showed predominately 2+, 3+, and 4+ reactions. Furthermore, the animal showing negative or 1+ milk reactions had a consistent blood titer of 1:25, while the animal showing 2+, 3+, and 4+ reactions had a consistent blood titer of 1:50.



Fig. 1.—Milk plate test reactions.

that the 1+ reactions in the milk plate test were insignificant and could have been ignored without impairing the test results. Table 1 shows no 1+ reactions in the infected group, whereas 1+ reactions did occur in four of the six noninfected groups.

Results during the first week of lactation and the drying off period are not included in the table because of the variable reactions observed. These findings are similar to those reported by Moore,<sup>7</sup> who found that false positive reactions may occur during these periods.

No unexpected reactions occurred in the noninfected unexposed and noninfected exposed cattle except by the plate method in the latter group. The 1+ reactions were due to approximately 50 per cent of the samples collected from 1 cow. Considering 1+ reactions as insignificant, both milk tests were successful in identifying cattle in the two groups.

Calf vaccination was responsible for a very small percentage of reactions above 1+ on the milk plate test as compared with a rather significant percentage of 2+ and 3+ reactions on the milk ring test.

The vaccinated adults showed all degrees of reactions in the milk with both tests. The 3+ and 4+ reactions, however, were due principally to 2 animals. In the majority of animals in this group, there was no correlation between the blood agglutinin and milk reactions.

In the reactor ceased shedder group, most of the reactions obtained with the milk plate test were 2+, 3+, and 4+ as compared with reactions of 1+, 2+, and 3+ with the milk ring test. All animals except 1 in this group were classified as reactors by the serum-agglutination test.

The most encouraging results were in the group classified as infected by virtue of direct isolation of the *Br. abortus* organism. This group showed predominate 3+ and 4+ reactions. The milk plate test gave no 1+ reactions and the highest percentage of 4+ reactions.

On many occasions during the course of the experiment, mastitis occurred in individual animals, causing difficulty or impossibility of interpretation of results in the milk ring test. The plate test in each case gave a satisfactory reading.

One hundred and twenty-two negative milk samples from goats were tested by both methods. Although the cream line was very thin, the milk ring test was satisfactory on these samples. On the addition of positive skim milk, whole milk, or serum from infected cattle, the agglutinated cells remained in suspension, and thus no ring formation occurred. When the milk plate test was used under the same conditions, no difficulty was experienced in obtaining a strong positive reaction. Although milk samples from infected goats were not available, there were no indications that the

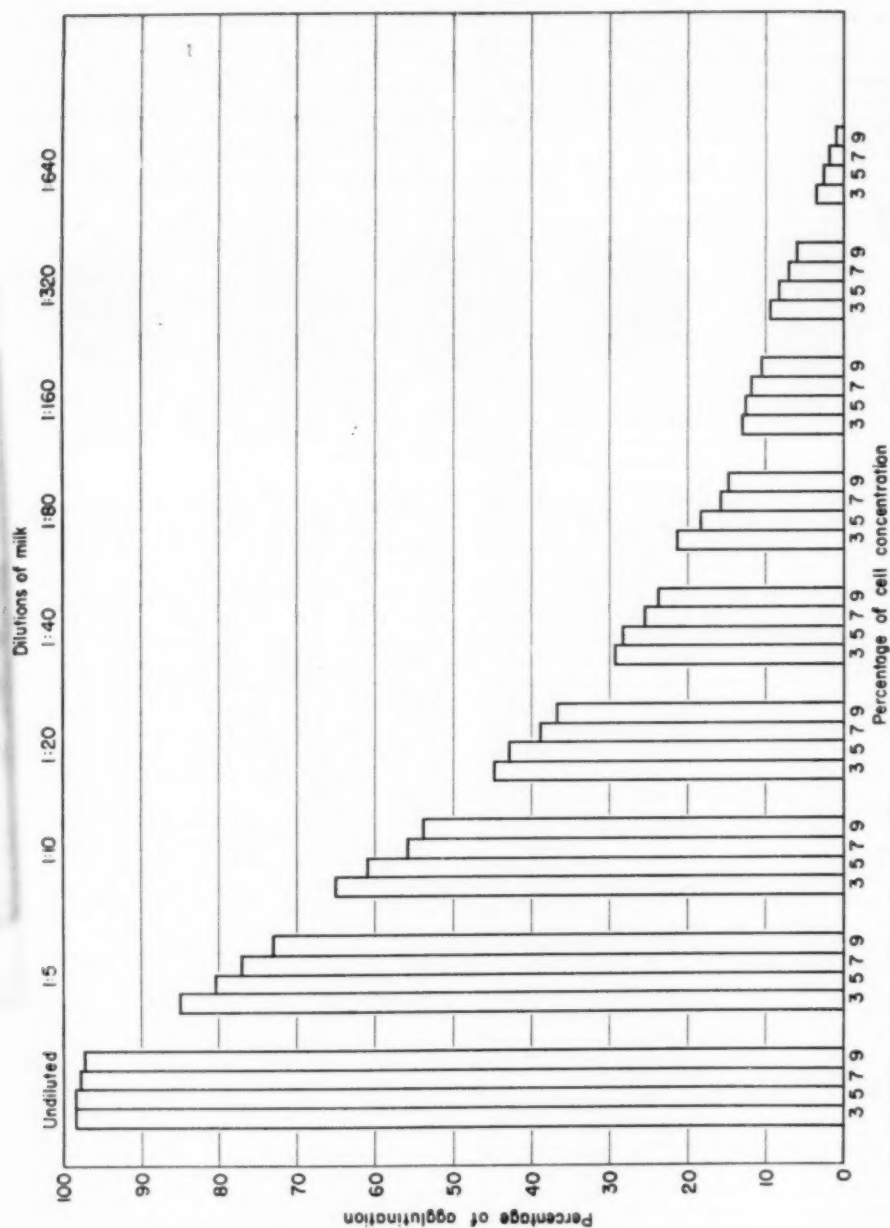


Fig. 2.—Effect of cell concentration on efficiency of antigens when tested on undiluted and diluted milk from *Brucella*-reacting cows.



milk plate test would not be a satisfactory method for testing such samples.

Four commercial homogenized milk samples were tested. It was impossible to interpret results of the milk ring test, but the milk plate test gave a clear negative reading on three samples and a positive reading on the remaining one.

During the course of the experiment, no difficulty was experienced with the milk plate test in obtaining readings on a limited number of samples of skimmilk, sour milk, or milk containing up to 40 per cent cream.

#### DISCUSSION

Preliminary studies indicate that the milk plate test will be a valuable aid in brucellosis control work. It has the advantage of convenience and saving of time over methods now in use. As the plate agglutination method is employed to a great extent for testing blood serum, because of its convenience and simplicity, so may the milk plate test be used. The equipment necessary for making the latter test is relatively simple, being the same as that used in the regular serum-agglutination test. As most brucellosis laboratories already have this equipment on hand, no additional facilities are needed. The time required for obtaining a reading with the milk ring test is considerably more than the twelve minutes required with the milk plate test.

The milk plate test has a wide range of flexibility in that the necessary equipment for the test is easily portable for field use if desired. The range of its usefulness is increased in that cream, sour milk, homogenized milk, skimmilk, or milk from quarters affected with mastitis may be tested without any alteration of the product.

It is realized that the information presented represents individual animal tests; however, the milk plate test is highly effective in identifying actively infected cattle. Furthermore, positive reactions were obtained on the milk of these cows when it was diluted as much as 1:20.

The difficulties encountered in testing goat's milk by the milk ring test are largely overcome by the milk plate test. The testing of this product is of particular importance to South America, Mexico, Asia, Africa, and Europe as well as in sections

of the United States where goat's milk is used.

Because of the insignificance of 1+ reactions, they might well have been elimi-

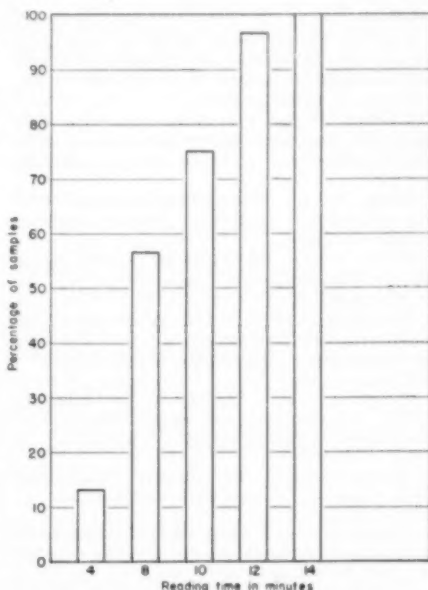


Fig. 3—Time required for constant agglutination to occur at room temperature.

nated, thereby avoiding much of the confusion experienced under field conditions where the greatest amount of error occurs in the 1+ and 2+ reactions with the milk ring test.

#### SUMMARY

A method for diagnosing brucellosis is introduced in the form of a plate test on milk. It was found to have the following advantages:

- a) The milk plate method is not limited to bovine milk of standard cream content.
- b) The milk plate test identified 99.7 per cent of the milk samples collected from infected cows.
- c) The milk plate test requires only twelve minutes to obtain a reading.
- d) Goat's milk may be tested by the milk plate method.
- e) Equipment presently employed in the

serum-agglutination plate method is used to perform the milk plate test.

f) The milk plate test provides a convenient and comparatively simple test for the diagnosis of brucellosis.

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Transmissible gastroenteritis in swine is always characterized by scouring and, usually, vomiting. Scouring starts within twenty-four hours after birth. The younger the animal affected, the heavier the death loss. Older swine are often affected but mortality is negligible. There is no treatment, and control depends upon isolation and farrowing in unaffected premises.—L. P. Doyle, D.V.M., Indiana.

### Withdrawal Recommended by Beef Cattle Representatives From U.S. Livestock Sanitary Association

A significant development at the 55th Annual Meeting of the United States Livestock Sanitary Association, held in Kansas City, Mo., on Oct. 14 to 16, 1951, was the "revolt" of the beef cattle producers against the organization of the Association and, more specifically, its executive committee. The livestock sanitary officials of the states, territories, and Canada constitute the executive committee of the U. S. Livestock Sanitary Association; this committee has the constitutional powers of directing the Association's policies and activities, including the approval of reports rendered by committees. The livestock men leading the fight for revision of the Association's constitution and by-laws and of the powers of the executive committee expressed the belief that such final decisions should reside with the entire membership. Around this concept of reorganization was waged the battle which led to the recommendation of the livestock industry members that they withdraw from the U.S.L.S.A.

#### WITHDRAWAL RECOMMENDED

Mr. Tom Arnold, beef cattle producer from Nebraska and chairman of the Special Committee on Revision of Constitution and By-Laws, did not submit a report of his committee to the members because of the executive committee "veto" rights before the report would be submitted to the membership for final action. Because of this organizational procedure he said, "There is no course open to the self-respecting livestock man but to withdraw from the Association."

Dr. R. W. Smith, state veterinarian of New Hampshire and member of the revision committee, reviewed the objectives and purposes of the Association, the powers of the executive committee, the method of revising the by-laws, and the accomplishments of the U.S.L.S.A.; he expressed his willingness to provide for appropriate representation of the entire livestock industry on the executive committee if such representatives were elected by the membership.

Judge J. G. Montague, of Texas, legal counsel of the Texas and Southwestern Cattlemen's Association, next expressed the support of his organization for Mr. Arnold's

withdrawal recommendation. He also reviewed the proposed revisions to the constitution and by-laws which were submitted at the 54th Annual Meeting in Phoenix, Ariz., in 1950, which would: (1) provide for the addition to the executive committee of one representative from the livestock industry from each state; (2) remove from the executive committee the jurisdiction over the policies of the Association; and (3) eliminate the requirement that all reports and recommendations be referred to the executive committee for approval, reserving the final approval for the general membership.

Mr. Herman Aaberg, director of the livestock department of the American Farm Bureau Federation, spoke in support of Mr. Arnold's and Mr. Montague's viewpoints and urged the adoption of the proposed revisions which, he said, had the approval of his organization.

Several other representatives of the livestock producers and sanitary officials voiced various opinions, but the session adjourned without adopting any formal recommendations or compromise proposal.

#### PROPOSALS OF AMENDMENTS

On the following day, the executive committee reported the rejection of the revisions of the by-laws outlined by Mr. Montague the previous day. Dr. Smith then proposed amendments to the by-laws which would enlarge the executive committee by ten representatives from the various facets of the livestock and poultry industries and the transportation facilities, plus the elected officers of the Association. He also proposed deletion of the controversial provision relating to the control of the Association's activities and policies by the executive committee.

Dr. D. M. Campbell, of Chicago, proposed revisions to the by-laws which would provide for enlargement of the executive committee by adding representatives of the various segments of the livestock and poultry industries, representatives of railroad and trucking interests, two practitioner representatives from the AVMA, and five additional members elected by the foregoing group. His proposal would also provide for the accreditation of these representatives by the executive committee and give that committee power to veto actions of the Association which are contrary to state

laws or regulations. He further recommended revisions that would make the executive committee the administrative body of the Association, which would require that reports and recommendations be referred to the executive committee by the general membership with or without recommendations for adoption or rejection.

Since no revision of the constitution and by-laws can be adopted until one year after it is proposed, no action can be taken on these proposed revisions until the 56th annual meeting in 1952.

#### OFFICERS ELECTED

The new officers elected are: Dr. R. L. West (Minnesota), president; Dr. T. Childs (Ottawa), first vice-president; Dr. A. K. Carr (California), second vice-president; Dr. I. G. Howe (New York), third vice-president.

A total of 378 registered for the meeting of which approximately one third were non-members.

Scientific notes from the papers presented at this meeting will be published in the February JOURNAL.

#### BAI Needs Additional Veterinarians—Entrance Salary Raised and Promotion Opportunities Increased

A letter from Dr. B. T. Simms, chief of the Bureau of Animal Industry, U.S.D.A., late in November called attention to the Bureau's very real needs for veterinary personnel and stated that initial appointments to all the positions is in the grade of GS-7, the entrance salary to which was recently increased from \$3,825 to \$4,205 per annum. Dr. Simm's letter also pointed out the good promotional opportunities available. The letter follows:

The Bureau is still in need of additional veterinarians for assignment to Federal meat inspection, brucellosis and tuberculosis control and eradication activities in this country, and the foot-and-mouth disease program being conducted in the Republic of Mexico. The greatest need at this particular time is for the meat inspection activity in which we are faced with the serious situation of meeting constantly increasing inspection demands, some of which, of course, arise directly from the emergency.

As you probably know, initial appointments to all of our positions are made in grade GS-7. Under recent legislation the entrance salary rate of this grade was raised from \$3,825 to \$4,205

per annum. Persons appointed to this grade are entitled to periodic salary increases of \$125 per annum upon the completion of each fifty-two weeks of satisfactory performance until the maximum rate of \$4,955 per annum for that grade is attained. However, the opportunities for promotion to grade GS-9, the entrance rate of which has been raised from \$4,600 to \$5,060 per annum, are favorable within a reasonable period for those veterinarians who demonstrate on-the-job efficiency, initiative, and other qualifications required in filling the higher grade positions, regardless of whether or not they have reached the top salary rate of grade GS-7. Veterinarians serving in grade GS-9 likewise are entitled to periodic salary increases of \$125 per annum upon the completion of each fifty-two weeks of satisfactory performance until the top rate of \$5,810 per annum for grade GS-9 is attained.

Further information can be obtained, or applications made, by writing direct to: Chief of the Bureau of Animal Industry, U. S. Department of Agriculture, Washington 25, D. C., or by getting in touch with the nearest federal veterinarian in charge.

### Opportunity for Veterinary Practice in Guam

The governor of Guam has requested the JOURNAL to assist in acquainting veterinarians with the opportunities for private practice in the territory. His letter follows:

November 16, 1951

The Island of Guam, the major United States outpost in the western Pacific, does not have any veterinarian in private practice. The Government of Guam desires your assistance in acquainting the members of the veterinary profession with the opportunities which exist in Guam, and will appreciate it if you will publicize the information in your journal.

In recent years, Guam has grown at a rapid rate. Economically, the territory is progressing toward stability after several years of war and enemy occupation. This has brought about an increase in commercial activity with a concomitant rise in population.

Prior to the inauguration of civil government, the armed forces provided veterinary service for the civil population. Those services are no longer available to the local residents.

There are approximately 33,000 civilian residents in Guam. In addition, there are some 7,000 contractor's employees of United States citizenship and some 12,000 contractor's employees of Philippine citizenship. There are some 5,000 dogs, 4,000 cattle, 700 carabao, 10,000 hogs, and 100,000 chickens on the island.

The climate in Guam is similar to that of Florida and the Hawaiian Islands. The territory is in a most interesting period of political and economic development, and is approaching maturity. While rehabilitation is not complete, living can be pleasant and interesting for a person with intelligence, curiosity, and adaptability.

In order to be licensed to practice veterinary medicine in Guam, one must be a graduate of an accredited school of veterinary medicine, and be licensed to practice in one of the states or territories.

Doctors who are interested in private practice here should communicate with: Director of Agriculture, Government of Guam, Agaña, Guam, M.I., for further information.

Sincerely yours,  
s/CARLTON SKINNER,  
Governor of Guam

In initial stages of illness, infectious hepatitis and distemper may present similar signs of illness.

Infectious hepatitis antiserum, now available, will protect a dog for approximately three weeks and should be given again if exposure continues. Obviously, a vaccine that would confer a longer period of immunity is badly needed and probably will become available in the near future now that the problem is recognized.—James A. Baker, D.V.M., Ithaca, N. Y.

Eighty-six different diseases actually transmissible between other vertebrate animals and man include 20 virus diseases, 20 bacterial diseases, 10 nematode, 10 trematode, 9 cestode, 8 protozoan, 7 rickettsial, and 2 fungus diseases, with 6 more diseases caused directly by insects and arthropods transferred from animals to man.

The importance of brucellosis is emphasized when it is realized that its eradication from domestic animals would eliminate the only source of infection to man.

The easiest and most successful method of eliminating trichomoniasis is to use artificial breeding entirely.—J. C. Ramge, D.V.M., The Ohio State University.

Erysipeloid infection in man is caused by the same organisms that cause erysipelas in hogs.

## The Fourth Annual Convention of the National Association of Artificial Breeding

THE FOURTH annual convention of the National Association of Artificial Breeding was held at Swampscott, Mass. on Sept. 22 to 24, 1951. Veterinarians participating were Drs. L. C. Ferguson, Ohio State University, Columbus; and H. L. Easterbrooks, Storrs Agricultural Experiment Station, University of Connecticut, Storrs.

The meeting was opened by Mr. Morris Johnson, manager of the Pioneer Breeders Association of New York State, who introduced Mr. C. T. Conklin, secretary of the Ayrshire Breeders Association of America. The latter traced the development of the American cattle industry from the introduction of Spanish, Dutch, and English cattle (since there were no native American cattle, but only buffaloes) to the present time.

This was followed by a panel discussion by Mr. C. H. Boynton (M.S.), of New Hampshire, moderator; Dr. G. R. Barrett (Ph.D.), of Wisconsin, who represented the Holstein-Friesian Association of America; Mr. L. E. Cunningham of New Hampshire, who represented the American Guernsey Cattle Club; Dr. L. C. Ferguson, Ohio State University, Columbus, who represented both of the preceding associations in so far as serological proof of parentage is concerned; and Mr. Ken Wallin who represented the Artificial Insemination Associations of Wisconsin. The pertinent facts stressed were:

Mr. Cunningham, who drafted the original rules governing the registration of Guernseys resulting from artificial insemination (AI) and has been active in the constant revision thereof, discussed these rules. He decried the "semen peddler" who does a hit-and-miss job without proper records, but he says this leads to comparatively few errors. In general, he feels that the AI workers are the best field men for the purebred registry associations.

Dr. Ferguson described the method of

blood typing to determine parentage, a system which was actively developed by him and Dr. M. R. Irwin (Ph.D.), at the University of Wisconsin beginning about 1937. They now recognize 40 characters or antigens which do not positively identify but do eliminate many obvious impossibilities (see J.A.V.M.A., 111, (Dec., 1947):466-469).

Dr. Barrett reported that this system of typing was adopted by the American Guernsey Cattle Club and the Holstein-Friesian Association of America in 1939 and 1940. The Holstein-Friesian Association requires all bulls in AI units to be typed and now has 2,090 typed bulls. The accuracy is attested by checking results in the field. One technician showed 20 per cent error while all others showed no errors—and this worker insisted he could identify semen from various bulls without labels on the tubes.

Mr. Wallin inferred that AI has not hurt the breeders of purebred cattle, while admitting that the good master breeder has been a major factor in the production of proved sires and that the present system of putting most of the proved sires in AI units tends to eliminate this source of proved bulls.

Mr. J. F. Kendrick, who directs the Dairy Herd Improvement Association proved sire campaign in Washington, D. C., told the assembled group that the organization which they represent "has developed and is operating the greatest force in the dairy industry." Dairy herd turnover is complete in an average cycle of five years and AI can provide improved cattle for replacements. He emphasized the importance of "good cow families" in selecting sires for AI units.

Dr. E. L. Willett (Ph.D.), of the American Foundation for the Study of Genetics, traced the history of AI from the Dutch scientist who discovered spermatozoa in 1600, to the Italian investigator who used AI successfully in dogs in 1770, to the Russian worker who used a sponge to collect semen from the vagina of a mare in 1899, to the American veterinarian—the late Dr. Fred Miller—who developed the massage method of collecting semen, to the Italian

Dr. M. G. Fincher, New York State Veterinary College, Ithaca, who was the official delegate of the AVMA to the convention of the National Association of Artificial Breeding, rendered a comprehensive report of the sessions. The published report is a condensation, prepared by Dr. R. C. Klussendorf, former editor-in-chief of the JOURNAL and now director of Veterinary Medical Services, Commercial Solvents Corporation.



who perfected the present type of artificial vagina (considered the greatest contribution ever made to AI), to the Danish program of insemination into or through the cervix, to the organization of the No. 1 American AI circuit in New Jersey in 1937 (with Dr. J. A. Henderson (ONT '36) at its head), and to the development of the several stages of diluter fluids.

One session was devoted to chemotherapeutic developments such as: (a) Salisbury's use of sulfanilamide to depress metabolism of the sperm cells and thereby increase rate of fertilization; (b) Almquist's use of antibiotics with sulfanilamide to increase fertilization rate still more; (c) Schultz's use of thyroxin to stimulate sluggish sperm cells, especially when more than two days old; (d) studies of the optimum egg yolk content (now recognized at 1.2 to 2.8%) of diluters; Lardy's work showing that spermatazoa taken from the epididymis have a low metabolic rate and that this is increased by the sulfur in the secretions of the secondary sex glands; Willett's report, quoting J. T. Reid, that vitamin E is valueless in the treatment of bovine infertility, while vitamin A deficiency interferes with the fertility of mature bulls only when carried to a point of starvation accompanied by paresis, although it may be a fairly common source of infertility in young bulls; Casida's observation that semen studies are far advanced and work with the hard-to-settle cow must come next; and Willett's further observations that records in at least one herd show that cystic ovaries run in families and are associated with a sub-optimal production of progesterone. (This was an excellent presentation and deserves more space than the few lines devoted to it here.)

This was followed by a so-called "panel," which was really a symposium. Dr. H. L. Easterbrooks reviewed his work with antibiotics and sulfonamides as semen preservatives (J.A.V.M.A., 117, (Dec., 1950): 388). Streptomycin is his favorite. A consensus of the discussion would indicate that 500 units of penicillin and 500  $\mu$ g. of streptomycin per cubic centimeter of diluted semen are about average. This is considered adequate to inhibit growth of *Vibrio fetus*, and may be sufficient to serve as a partial or even effective treatment for the cow.

Dr. N. L. Van Demark (Ph.D.), of the

University of Illinois, advocated the middle of the cervix as the most favorable site to deposit semen, and sixty to ninety days after parturition as the earliest favorable time for rebreeding. He called attention to the fact that sperm cells migrate from the cervix to the oviduct in as short a time as two and one-half minutes and that Brucella infection may result from deposit of semen in the horn of the uterus but has not been reported when infected semen was deposited into the cervix only.

Dr. T. Y. Tanabe (Ph.D.) reported that in a considerable group of sterile cows, 10 per cent showed abnormal organs (pathological or congenital). Early ovulation was much more prevalent than delayed ovulation, in these studies, and fetal hemorrhage before the age of 37 days was an important cause of fetal death.

#### SUMMARY

This meeting was highly educational and the Association was complimented upon the good work being done and the excellence of the prepared papers and the discussion. It was suggested that a thorough study be made to prevent perpetuation of such genetic abnormalities as pendulous udders, umbilical hernias, etc.

For AVMA members, the following observations are offered as being particularly pertinent and interesting:

The discussion of blood typing as presented by Dr. L. C. Ferguson should provide program material for a number of meetings of veterinarians.

The suggestion by Mr. Wallin that more education is needed seems to be well founded and veterinarians who practice in dairy cattle-breeding communities should be familiar with the forms required by the several registry associations.

Many breeders would quarrel with the inference that AI growth has not hurt the purebred cattle breeders. The market for bulls is greatly reduced, the prices for a few outstanding proved sires are so high that they are taken from the herds of the master breeders and, hence, continuation of these blood lines is discouraged.

Mr. Cunningham's report that 16 per cent of the dairy cattle in the United States are now enrolled in AI units is surprising.

Dr. Ferguson's elucidation of the three types of twins and their differentiation by means of blood tests: type 1, identical male

or female twins with identical blood types; type 2, male and freemartin twins in which there is circulation of blood to both in a common circuit and, hence, a similar pattern of blood antigens or factors; type 3, ordinary twins of either sex which retain their own circulations and have distinct blood patterns.

Mr. Kendrick's suggestion that bulls be saved from "good cow families" leads to a question of how this may be achieved when the price offered by an AI unit takes the outstanding bull out of the breeder's herd and makes continued mating with outstanding cows over the years difficult if not impossible.

His further statement that the bull with a high index in a purebred herd should not be expected to maintain this index on a "John Doe" basis of promiscuous use in all herds of a unit is not clear. In actual pounds of production, this may be true; but in percentage of increased production of daughters over their dams, the genetic superiority of the prepotent bulls should certainly prevail over the heterogeneous genetic makeup of all kinds of cows. If we interpret the original statement correctly, it might be argued that the outstanding sire might be more valuable to the future of the breed and the dairy industry when mated with a reasonable number of outstanding cows than when mated with a vast number of ordinary or mediocre cows from which sons will not be raised and proved to carry on the blood lines.

The discussion of the three types of sire indexes was interesting, but it moved too rapidly for ready comprehension. This should be available to veterinarians in their own literature.

There is a great and growing competitive struggle between the private, the endowed, and the cooperative AI units. This is healthy, since it encourages each to do as good a job as possible on the maximum number of cows which it can enroll.

An interesting theory or hypothesis was advanced that sulfanilamide and antibiotics may be used to inhibit bacterial multiplication during the first two days of semen storage and that addition of thyroxin at the end of two days to semen to be used later may help to prolong the period during which semen may be used efficiently. This is still only theory, but sounds logical and should be checked.

Casida's suggestion that ova from hard-to-settle cows be removed and implanted into normal cows to determine if the fault lies with the ova or with the uterus seems a remote and difficult approach, but it offers food for thought.

Dr. Willett's remark that breeding a highly fertile cow to a bull of low fertility will reduce the fertility of the cow in future matings was made by the late Dr. W. L. Williams many years ago and substantiated by his records. It is interesting to learn that the fact has just been rediscovered by AI workers.

Dr. Van Demark's statement that once an inseminating technician has learned to deposit semen into the horns of the uterus, it is impossible to break him of this practice and retrain him to stop at mid-cervix is similar to the problem of correcting the habit of some veterinarians who enucleate corpora lutea and rupture cysts without regard to other history presented. It is equally impossible to break this habit and retrain on logical lines.

AI has been oversold to some people who expect it to replace rather than supplement programs of breeding, feeding, and management to secure maximum herd production.

The American Foundation for the Study of Genetics is an excellent example of a research group which maintains close contact with an active bull stud and relays its findings promptly to use in the field.

Lyophilization of semen and storage at freezing temperatures as reported by Dr. Parks of England in *Time Magazine* offers opportunity for study.

Sulfur treatment to lower the metabolic rate of spermatozoa as suggested by Dr. H. A. Lardy (Ph.D.) might make refrigeration of semen unnecessary.

*Jenner's Cowpox Inoculation.*—Outbreaks of cowpox seem to be as common now as in Jenner's day, though smallpox is no longer an endemic disease. Nor is there any evidence that the disease in cattle in England originates from contact with recently vaccinated individuals.—*Brit. M. J., Aug. 4, 1951: 254.*

Occlusion of the bile duct by ascarids sometimes causes icterus in swine, but there is no fever or associated anemia.—*Clarence R. Cole, D.V.M., The Ohio State University.*



# SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

## Observations on the Bacterial Flora of Infertile Dairy Cows

D. C. LINDLEY, M.S., D.V.M., and R. C. HATFIELD, M.A., Ph.D.

San Luis Obispo, California

LOW FERTILITY is one of the most important problems of the dairy industry. Brucellosis studies have dominated the field of infectious diseases causing sterility. More recently, attention has been given to trichomoniasis and vibriosis. Infertility has continued to be a problem in many herds in which these diseases have been reasonably well eliminated as the cause.

Hallman<sup>1</sup>; Beaver, Boyd, and Fitch<sup>2</sup>; Reach<sup>3</sup>; Bartlett<sup>4</sup>; Hatch, Feenstra, and Jennings<sup>5</sup>; and Easley, Leonard, and Trotter<sup>6</sup> have given attention to the bacterial flora of infertile cows which were apparently free of brucellosis, trichomoniasis, and vibriosis.

It is recognized that to some extent the fertility problem is dependent upon good nutrition and general breeding management. Studies by Kingman,<sup>7</sup> Casida, *et al.*,<sup>8</sup> Davis, *et al.*,<sup>9</sup> and Moore<sup>10</sup> have demonstrated the value of endocrine substances as an aid in correcting certain infertile conditions in cattle. It is now known that genes can be responsible for infertility in inbred cattle. Whether the infertile conditions corrected by endocrine treatment are basically genetic, nutritional, or infections disturbing the endocrine balance between the endometrium and the rest of the endocrine system has not been clearly established.

Chambers,<sup>11</sup> and Woelffer<sup>12</sup> have demonstrated the value of intra-uterine injections of antibiotics in correcting infertility apparently due to low grade bacterial infections. Their findings have been substantiated here by the use of intra-uterine injections of antibiotic and bacteriostatic agents. This success led to the work reported herein, which was attempted in order to learn more about the types of bacterial infection encountered in the herd in which this work was conducted.

### PROCEDURE

All cattle used in this study were a part of a college herd in which artificial insemination was regularly practiced. The animals were vaccinated for brucellosis, and

this disease was not considered a problem in the herd. No evidence of the presence of trichomoniasis or vibriosis was ever found.

The cows selected in this study were chosen because they had been bred several times without conceiving, or had unfavorable histories including apparent early abortion. In addition, the uteri of several animals were cultured following slaughter, and several aborted fetuses were cultured in an attempt to obtain a clear picture as to the type of bacterial flora which may have had a bearing on the problem.

In culturing the live cows, an attempt was made to culture the uterus primarily. In order to obtain uterine samples, the genitalia and neighboring parts were washed thoroughly with green soap. A sterile fiber speculum, 8 in. long, was introduced into the vagina, and a sterile glass pipette was passed through the speculum to

TABLE I

Cow	Antigen	Titer	Antigen	Titer
405	N. perflava	1:60	C. equi	1:10
341	N. perflava	1:20	C. equi	neg.
521	N. perflava	1:80	C. equi	1:10
385	N. perflava	neg.	C. equi	neg.
365	N. perflava	1:640	C. equi	1:10

or uteri. The pipette was guided into the uterus by rectal manipulation. A sterile glass syringe containing 50 to 100 ml. of physiological saline was connected to the pipette and injected into the uterus. This was massaged slightly in the uterus and as much of the solution as possible was then withdrawn. Usually, 10 to 15 ml. could be recovered.

Smears of the uterine washings were

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made and stained with weak methylene blue and by Gram's method. The washings were cultivated as soon as possible on nutrient agar (Difco), blood agar (5%), thioglycolate broth (Difco), cystine trypticase agar (BBL), and dextrose phosphate broth (al-bimi). Incubation was carried out at 37 C. under aerobic, increased carbon dioxide tension, and anaerobic methods. Growth was checked at eighteen- and 48-hour intervals, and isolations were made of each distinctly different colony.

# RESULTS

Following careful examinations of morphology, cultural characteristics, and physiological properties, 26 separate species were recognized:

<i>Micrococcus (candidus and pyogenes)</i>	6
<i>Neisseria (subflava and perflava)</i>	5
<i>Corynebacterium (bovis and equi)</i>	4
<i>Achromobacter (lipolyticum)</i>	1
<i>Gaffky (tetragena)</i>	1
<i>Streptococcus</i>	1
Unidentified	
Gram-positive, non-sporeforming rods	7
Gram-negative rods	1

The unidentified gram-positive rods are not described in Bergey's manual (Breed, *et al.*<sup>2</sup>), but appear to be diphtheroids.

Eight cows (cows 385, 341, 204, 169, 357, 569, 365, and 521) were bled and tested with antigens prepared from bacteria 520-1 (*Neisseria perflava*) and 204-2 (*Corynebacterium equi*). Most of these animals had suffered to some extent from infertility. Bacterial cultures were obtained from several.

In the preliminary testing, cows 169, 357, 365, and 521 showed titers of partial agglutination up to 1:40 against *N. perflava*. None showed appreciable agglutination in titers of greater than 1:10 against *C. equi*.

Cows 385 and 341 were inoculated with a bacterin prepared from *C. equi*, and cows 521 and 365 were inoculated with a bacterin prepared from *N. perflava*. Two weeks after the inoculations of the bacterins, blood samples were again drawn from the 4 cows, as well as from cow 405, which was one of those sampled. The results are shown in table 1.

A mixed bacterin was made from the bacteria isolated from cows 64, 204, 391, 405, 520, and 604 to give a concentration of  $9.8 \times 10^8$  cells per milliliter. This bacterin,

containing the twice-washed and spun-down cells in 0.5 per cent phenol in saline, is being used in a controlled vaccination experiment on the herd from which the bacteria were isolated. Although a number of vaccinated cows have conceived readily after this treatment, additional study will be necessary before it can be determined if the vaccinated cows show any higher fertility rate than the untreated controls.

# CASE HISTORIES

*Case 1 (Jersey Cow 169).*—This cow was 11 years old and had calved six times. Abortions had occurred on the third and fifth pregnancies, and retained placenta had occurred on the third and sixth parturitions. The cow had been bred eight times prior to sampling. The cow was affected with severe cervicitis with pus in the cervical discharge. The uterus and fallopian tubes appeared fairly normal. The ovaries were cystic. This cow was treated for some time after sampling, but was finally sent to slaughter. Autopsy revealed that the cystic ovaries were still present and there was a mucopurulent exudate in the uterine horns. There was no bacterial growth from this exudate on blood agar.

*Case 2 (Guernsey Cow 64).*—This cow was an aged animal, the breeding history of which is incomplete. She had been bred eight times prior to sampling. Abortions had apparently occurred twice between sixty and ninety days of gestation. The cow was treated with tyrothricin in oil following sampling, and bred four additional times before being removed from the herd as sterile.

*Case 3 (Jersey Cow 204).*—This cow was 7 years old and had calved three times with no abnormalities. On the basis of pregnancy examinations, the cow was diagnosed to have aborted at four and one-half months in the fourth gestation. The cow was sampled upon being found nonpregnant following this suspected abortion, and was then treated with tyrothricin in oil. She conceived after four additional inseminations.

*Case 4 (Guernsey Cow 357).*—This cow was 8 years old and had calved six times with no abnormalities. She had been bred four times prior to sampling. The cow was affected with cervicitis and endometritis at this time. She was treated with tyrothricin in oil immediately following sampling, and

conceived at the next heat period, twenty-one days later.

*Case 5 (Holstein-Friesian Cow 604).*—This cow was 5 years old and had calved three times with no abnormalities. She had been bred six times prior to sampling. Immediately following sampling, the cow was treated with tyrothricin in oil, and forty days later with furacin solution. The cow was bred once after treatment and conceived.

*Case 6 (Guernsey Cow 391).*—This cow was 4 years old and had calved twice with no abnormalities. She had been bred six times prior to sampling. She was treated with tyrothricin in oil immediately after sampling. After three additional inseminations, she was sent to market sterile.

*Case 7 (Guernsey Cow 405).*—This cow was 6 years old and had calved two times with no abnormalities, except that she was a shy breeder. The genital tract revealed no gross pathology that could be determined by rectal palpation. The cow had been bred twelve times prior to sampling. She was treated with tyrothricin in oil two weeks after the sample was taken. The cow developed cystic ovaries five months later, which responded to chorionic gonadotropin. After a long course of treatment, including massage of the genitalia, ascorbic acid therapy, and additional gonadotropic treatment, the cow conceived fourteen months after the sample had been taken. Pregnancy was determined at the time of slaughter, when 26-day-old twin embryos were found in the uterus.

*Case 8 (Holstein-Friesian Cow 607).*—This cow was 5 years old and had calved once with a dystocia and retained placenta. The cow had been a difficult breeder as a heifer. She had been bred fourteen times prior to being sampled. She had also been treated with triple sulfonamide solutions and penicillin intra-uterine a year prior to being sampled. In addition, she had received endocrine treatment with gonadotropins. The genital tract revealed no gross pathology on rectal palpation. The cow was bred seven additional times after sampling, and sent to slaughter sterile. The cow was slaughtered two days after being in estrus and ovulation had not yet occurred.

*Case 9 (Holstein-Friesian Cow 608).*—This cow was 12 years old. She had severe arthritis and had been in general ill health for two years. She failed to show normal

estrus and showed evidence of endometritis. She was treated twice prior to culturing with furacin solution. The uterus was cultured after the cow was destroyed.

*Case 10 (Hereford Cow 520).*—This animal was 1 of a group of 10 young Hereford cows, 7 of which aborted during a short time. Abortion occurred at about 175 days. Since they aborted on the range, it was difficult to obtain a fresh fetus for culture; however, in this case, the fresh fetus was taken directly to the laboratory and cultured. In all of these cases, the abortions were complicated by retained placenta. All of the cows were vaccinated for brucellosis, and blood tests were negative or showed low titers attributed to vaccination. *Neisseria perflava* was isolated from this fetus in pure culture.

*Case 11 (Holstein-Friesian Cow 613).*—This animal aborted at 177 days. Culture of the stomach contents revealed *Micrococcus pyogenes* var. *aureus*. Conception was delayed until the cow was treated with tyrothricin in oil.

*Case 12 (Holstein-Friesian Cow 626).*—This animal aborted at 162 days. Culture of the fetus revealed *M. pyogenes* var. *aureus*. Conception occurred six months after abortion, without treatment.

#### DISCUSSION

Due to the size of the herd, uniformity of handling and treatment practices, conditions were found satisfactory for starting this type of survey. From these observations, low-grade bacterial infections appear to be a cause of infertility in dairy cows. The exact nature of the deleterious effect of the bacteria's presence is unknown.

Worthy of notice is the remarkably high incidence of *Neisseria*, and the titer obtained from this antigen. From a review of the literature, not much emphasis has been placed upon this genus of bacteria.

Proof that the bacteria present cause or aggravate the infertile condition is evidenced by the fact that in many cases proper antibiotic or bacteriostatic treatment frequently restores the reproductive capacity.

#### SUMMARY

A brief review of the literature as to the cause of infertility in dairy cows is given. Intra-uterine samples were aseptically ob-

tained by means of a sterile saline wash, and the washings cultured on appropriate mediums. Types of bacteria found were tabulated. Serological findings indicate the possible prevalence of *Neisseria* in infertile cows in this herd. Brief case histories of 11 infertile cows are given.

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#### Influence of ACTH on Burns

Experiments in animals and human volunteers as well as clinical trial in burned patients failed to produce any evidence that ACTH repairs or prevents the abnormal capillary permeability caused by burns. These observations do not preclude the possibility that ACTH may influence the abnormal capillary permeability associated with the inflammation of infection.—*Ann. Surg.*, October, 1951.

#### Experimental Corneal Grafts

The subconjunctival administration of cortisone in rabbits following homologous corneal grafts resulted in a delay in wound healing; keratoblastic proliferation failed, but epithelial proliferation was not inhibited.

In this experiment, homologous corneal grafts were done centrally in each eye of rabbits, and the left eye was treated with cortisone (1.25 mg. injected subconjunctivally immediately after surgery and thereafter every 48 hours until the animal was killed). Cortisone did not seem to inhibit epithelial proliferation, and during the first seventy-two to ninety-six hours, there was very little difference in the gross or microscopic appearance of the wounds in the treated and untreated eyes. After that time, the cortisone-treated eyes showed more bulging of the grafts, and the graft and adjacent cornea were not as clear as in the control eyes. Differences in microscopic findings became evident after the third day; the leukocytes persisted in the wound and there was very little displacement of epithelium by proliferating keratoblasts; as late as the eleventh day, the wounds were filled only by epithelium and fibrin.—*Am. J. Ophthalm.*, July, 1951.

#### Effect of Cortisone and ACTH on Intra-Abdominal Adhesions

The number of intra-abdominal adhesions resulting from talcum powder in experiments upon dogs and rats was considerably reduced by cortisone or corticotrophin (ACTH). The formation of adhesions was prevented by ten to fourteen days of treatment with doses of 10 mg. of cortisone or ACTH twice a day in the dog, and by 2 mg. of cortisone once a day in the rat. There was no interference with wound healing by these doses of ACTH or cortisone. Neither wound dehiscence nor abdominal evisceration occurred.—*Arch. Surg.*, October, 1951.

The administration of physiological doses of thyroxin to infertile buck rabbits considerably improved libido, semen qualities, and the process of spermatogenesis.—*Nature*, Sept. 15, 1951.

### A 360-Degree Torsion of the Uterus in a Cow

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In April, 1950, assistance was given a 3-year-old purebred Holstein-Friesian cow while delivering her first calf. The assistance required was merely a slight forced extraction affected by manual pulling on the front limbs. On April 16, 1951, the same cow was again observed in labor on the date she was due to calve. Everytime that labor was evident, she would kick at her abdomen in pain. Considerable placental fluid had been discharged.

Vaginal examination revealed a severe uterine torsion to the right. Entrance of the hand into the vaginal and cervical canal was prohibited because of the severity of

and arms was unsuccessful in even starting detorsion. Since it was impossible to restore the uterus to a normal position and effect a normal delivery, a cesarean section was performed. A live bull calf was delivered. The placental membranes were hemorrhagic and were left in the uterus since they could not be easily detached.

Following closure of the uterine incision, detorsion was affected. To completely restore the uterus to a normal position, it was necessary to revolve the uterus until the incision returned to its original position, thus a 360-degree torsion.

The following therapeutic measures were employed: Four uterine capsules were placed in the uterus just prior to closure of the incision. Each capsule contained 33 gr. of sulfanilamide, 5 gr. of sulfathiazole, and 207 gr. of urea with calcium phosphate. Just prior to complete closure

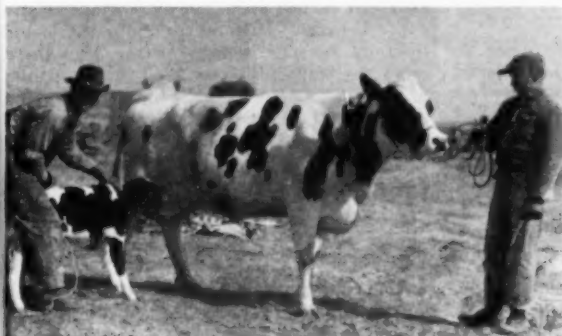


Fig. 1—A snapshot taken four days following surgery. The foreman, the calf, the cow, and the owner.

the torsion. Rectal examination revealed the left mesometrium to be stretched tightly across the top of the twisted uterine neck and vagina. The head and front feet of the calf could be palpated in the proper position and presentation for normal delivery.

Rolling of the cow or elevation of the hind quarters was not attempted because the torsion rod could not be attached and the cow was quite large.

A paravertebral lumbar block was established using a 2 per cent procaine hydrochloride solution. A laparotomy through the right flank was performed with the cow in a standing position. Lifting, pulling, and pushing with both hands

of the peritoneum, 250 cc. of sodium sulfamethazine, 25 per cent w/v., were poured into the peritoneal cavity. Immediately following surgery, 1,500,000 units of procaine penicillin G in oil and wax were given intramuscularly. The penicillin was administered at 48-hour intervals for a total of three times.

The placental membranes were discharged during the night following the surgery. The next day the cow was eating. At no time following surgery did her temperature exceed 102.2 F. On the fourth postsurgical day, she gave 50 lb. of milk.

The cow was bred in June, 1951, and did not return in July. She was sold at a dispersion sale in August for \$750.00. The calf sold for \$225.00 at the same sale.

Dr. Safford is a practitioner in Helena, Mont.



# CLINICAL DATA

## A Technique for the Collection and Transfusion of Blood in Cattle

CHARLES F. SIMPSON, D.V.M.; D. A. SANDERS, D.V.M.; R. B. FRENCH, Ph.D.

Gainesville, Florida

WHOLE BLOOD is highly regarded as a therapeutic agent in many diseases of large animals. In the southern part of the United States, for example, blood is the product of choice of many veterinarians for the treatment of anaplasmosis. Literature references indicating the value of blood in this disease are abundant.<sup>1,2,3,4</sup> Blood transfusions are used in other parts of the country to treat such conditions as shipping fever, sweet-clover poisoning, debilitated patients, and many others.<sup>5,6</sup> It would seem logical, therefore, to recommend that an efficient technique for the collection and transfusion of blood be included among the skills possessed by the large animal practitioner.

At present, many practitioners in Florida collect blood from packing houses at the time of slaughter and store the citrated product in the refrigerator for a reasonable period in anticipation of an opportunity to use it in the field. Some veterinarians transfuse blood directly with the Shikles' hog cholera syringe as described by Coffee.<sup>4</sup> Still others employ the gravity flow technique.<sup>2,5</sup>

All of the methods of collection and transfusion of blood as described in the previous paragraph have limitations, so that blood transfusions are not used as extensively in veterinary medicine as they might be if a more efficient and simple technique were available. In the first method, blood must be available at either the veterinarian's hospital or the packing house when needed. Moreover, indiscriminate collection of blood at slaughterhouses necessitates the use of the product from animals about whom the history is not known. Lotze, however, has shown that

blood from carrier animals of anaplasmosis can be used without deleterious effects in the treatment of the disease.<sup>3</sup> The second transfusion method is difficult to perform because the syringe has a tendency to become clogged with fibrin. The third procedure is extremely time consuming.

This paper describes a technique for the collection and transfusion of blood that has proved to be simple and efficient when used by the authors. The apparatus (*see* fig. 1) consists of a 4-liter aspirator bottle, together with various attachments including a vacuum-pressure hand pump having a chamber 16 in. in length and 2½ in. in diameter.

In the collection of blood by this technique, 400 cc. of a 2½ per cent sodium citrate solution are poured into the aspirator bottle and just enough is allowed to escape so that the inlet tubing and needle become coated with the solution. A 2-in., 12-gauge needle is guided into the jugular vein and the rubber tubing is attached to the needle. The apparatus should already have been assembled (*see* fig. 1) so that the long length of tubing at the top of the bottle has attachment to the vacuum side of the pump. Only slow strokes of the pump are needed to secure the blood from the distended vein of the donor animal; in fact, in our experiences, as few as 25 strokes deliver a gallon of blood within six to eight minutes. In the event that the pump is worked too fast, bubbles begin to form on top of the blood. If this occurs, the vacuum may be released by removing the clamp on the rubber tubing which is attached to the capillary tubing at the top of the bottle. Experience will teach the proper length of intervals between strokes that will give maximum results. Thirty-six hundred cubic centimeters of blood have been taken from

From the Florida Agricultural Experiment Station, Gainesville; associate veterinarian (Simpson); head, Department of Veterinary Science (Sanders); and biochemist (French).

Journal Series, No. 11, Florida Agricultural Experiment Station, Gainesville.

a 600-lb. animal without evidence of shock within the time indicated above.

After approximately 4 liters of citrated blood have been collected, a small amount of citrate solution is sucked through the needle and its tubing so that blood will not

become clotted therein. A Day's pinchcock clamp serves the purpose of keeping blood from flowing from the bottle after completion of blood collection.

The transfusion of blood necessitates the changing of the rubber tubing from the

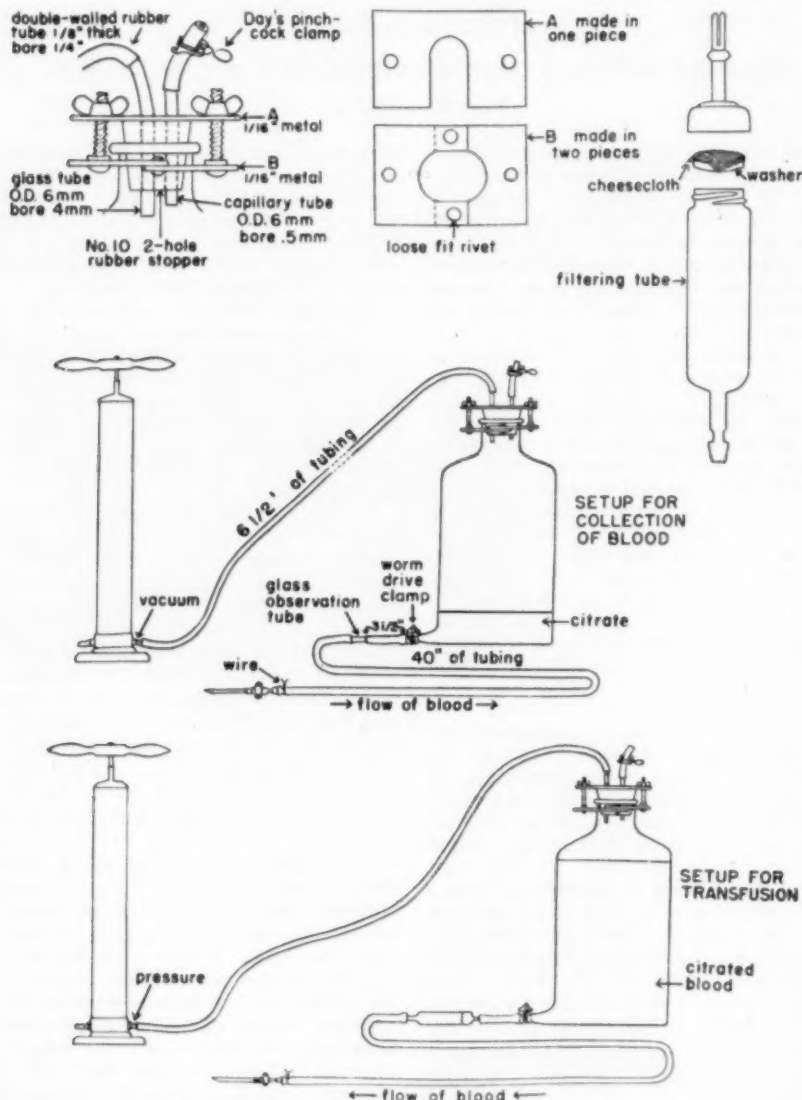


Fig. 1—Apparatus for collection and transfusion of blood.



vacuum to the pressure side of the pump. It is also necessary to replace the observation tube with the filtration tube. A double thickness of cheesecloth inserted in the top of the filtration tube and held in place by a washer acts as a filtering mechanism. When the apparatus is assembled for transfusion, a gallon of citrated solution can easily be injected at any desired rate.

#### SUMMARY

The technique described in this article is believed to be an efficient means for the collection and transfusion of blood in cattle. The advantages of this method over other procedures are obvious: it is fast and efficient; it may be used wherever it is possible to secure an animal; no shaking is required to mix the citrate solution and blood; it is a means by which blood can be collected from a source where the history of the donor animal is known.

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The most radio-curable tumors are those which grow slowly, metastasize late, and respond slowly to radiation. These tumors tend to regress gradually and the individual cell response is one of differentiation rather than cell death. The brilliant, immediate results with very malignant, rapidly growing tumors are almost always clouded by their rapid recurrence elsewhere, widespread dissemination, and death.—*J. L. Morton, M.D., The Ohio State University.*

Chlordane was discovered in 1945. It is particularly well suited to the control of swine mange and poultry parasites, and if used judiciously, will effectively control cattle lice, flies, sheep keds, and true ticks.—*Irwin H. Roberts, D.V.M., Brookings, S. Dak.*

## Why Trim a Dog's Ears

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For many years, I have trimmed and taught trimming of dogs' ears as part of the necessary knowledge for a veterinarian. I never liked to do it and have never met a veterinarian who, down in his heart, felt he was doing a worth-while thing. Yes, he enjoyed making the easy money, but that was his major justification. Sure, the owner wanted it done or thought that it "had to be done," but this is not a valid justification, especially when you consider what it does to the puppy. Fortunately, there are only a few breeds subjected to this practice.

First, it is questionable to say that it improves the dog's appearance. I've seen as many dogs ruined as have been improved and the work was done by "experts." Dogs develop differently, and I have yet to see the person who can accurately predict how a dog will grow, as there are even litter variations.

The job that looked all right on a puppy just doesn't fit the grown dog. Next, the operation is not without danger, especially as it is needless. The operation may be performed safely and harmlessly, and certainly the veterinarian is best qualified to do it, but the after-care of two painful ears healing is not, and can not be argued as, painless. Dogs get head shy, they are disillusioned in man's friendship for them, they become nervous, and their psychological attitude is not improved. After-care is important and does not help the dog, as it is just a week or more of pain and annoyance. Years ago, horses' ears were trimmed for "fashion's sake." Why must we still be barbarous to man's best friend—only for money's sake. I, for one, don't want my money to come that way.

As veterinarians, let us condemn this unjustifiable practice for fashion's sake and get on talking terms with our conscience. The veterinary profession is a humane profession.

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## Johne's Disease in an Experimental Flock of Sheep and its Elimination

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*Bozeman, Montana*

JOHNE'S DISEASE, or paratuberculosis, has been recognized as occurring in sheep in England since 1911, but it was not reported in the United States until 1932 when Howarth<sup>1</sup> reported the disease in sheep in California. In 1940, Butler<sup>2</sup> reported the first diagnosis of Johne's disease in Montana, and in 1942, Eveleth, Gifford, and Anthony<sup>3</sup> reported on Johne's disease of sheep in Arkansas.

Since 1940, Johne's disease has been observed on three sheep ranches in Montana, but the number of known cases has been small and the course of the disease on the ranches has apparently been self-limited. Johne's disease has been recognized in cattle in Montana only a few times.

### OUTBREAK OF JOHNE'S DISEASE

The Montana Veterinary Research Laboratory lambs about 125 ewes each year. Established in 1929, this flock was run as a self-replacing unit until 1945. In May, 1942, the sheep were placed on a pasture in which there was no known history of Johne's disease. In September, 1942, a yearling ewe in this flock developed a chronic diarrhea, and on November 26, she died. Autopsy showed the characteristic lesions of Johne's disease, the diagnosis being confirmed by the demonstration of acid-fast organisms in sections of the mucosa of the colon.

No check for Johne's disease was made on the rest of the flock at this time, and no more cases were recognized until early in 1945, when 4 clinical cases developed. On Jan. 19, 1945, ewe J-52 was noticed as unthrifty and showing anorexia and diarrhea. On February 11, she was moribund and was killed. No gross abnormality of the intestinal mucosa was noted, but smears from the mucosa of the ileum showed numerous acid-fast organisms.

On February 12, ewe L-103 showed symptoms similar to those of J-52, and on February 26 she was moribund and was killed. The mucosa of the ileum was slightly thickened and showed mi-

nute petechiae. There was slight development of longitudinal folds in the posterior portion of the ileum, with dark color along the folds. Smears from the mucosa showed acid-fast bacteria in large numbers.

Ewe M-32, which had been losing flesh for six months, was killed on March 5, 1945. Diarrhea was not noted in this case. Autopsy showed no definite pathology other than slight thickening of the intestinal mucosa. The small intestine contained about 4,000 *Nematodirus*, which probably was a factor in the unthriftiness of the sheep. Smears from the intestinal mucosa showed acid-fast organisms in large number. In this case, note was made of the distribution of the acid-fast organisms as indicated by smears. Smears from areas 3 ft. and 12 ft. from the pylorus were negative. At 25 ft., a few organisms were found, and at 38 ft. and 51 ft., the acid-fast organisms were numerous in smears. Smears from the cecum showed acid-fast organisms in large numbers, while they appeared in only small numbers in the mucosa of the colon.

Ewe N-84 which had been unthrifty for four months, was killed on April 13, 1945. She did not develop diarrhea, but the feces were soft and unformed. Direct smear of feces showed acid-fast organisms. Autopsy showed thickening of the mucosa of the ileum, and the mucosa of the jejunum was thickened in spots. Acid-fast organisms were present in large numbers in smears from the mucosa of the ileum.

*Results of Tests with Johnin.*—On March 23, 1945, all of the 130 sheep in the laboratory flock were tested with the intradermic johnin produced by the Regional Animal Disease Research Laboratory of the U. S. Bureau of Animal Industry. The johnin was injected intradermally in the caudal fold or in the area lateral to the rectum, and the reading was made at seventy-two hours. Twenty-four of the reactions were classified as positive and six as suspicious. Two of the reactors were killed within the next two months, and showed no lesions at autopsy.

On June 12, 1945, the entire flock was again tested with johnin. Of the 22 remaining reactors to the first test, only 10 reacted positively to the second test, while 2 were suspects. All those recorded as suspects on the first test were negative on

From the Montana Veterinary Research Laboratory (Montana Experiment Station and Livestock Sanitary Board co-operating). Paper No. 249, Journal Series Agricultural Experiment Station, Montana State College, Bozeman.

the second test. Five sheep reacted positively to the second test which had been negative to the first test, and 2 were suspects.

A third test of the entire flock was made on Aug. 28, 1945. Fifteen positive reactions were recorded of which 12 had been positive on either one or both of the previous tests. Eighteen sheep which reacted negatively to the third test had been either positive or suspicious on one or both of the previous tests.

After the johnin testing was started, 18 sheep which had reacted to one or more of the tests came to autopsy. None of the sheep which reacted on only one test showed evidence of infection at autopsy. Of 10 which were recorded as reactors on at least 2 tests, 7 showed some degree of thickening of the intestinal mucosa, although smears from the intestinal mucosa were positive in only 3 of these 10 cases.

#### METHOD OF CONTROL

As this flock of sheep was carried as a stock of animals of known history for use in various experimental projects, the existence of an insidious infection of this kind in the flock could not be allowed to continue. Lovell, Levi, and Francis<sup>1</sup> reported that naturally infected feces experimentally exposed to atmospheric conditions contained viable bacilli at 246 days but not at 284 days, which would indicate that premises should become safe within a year. Experience with an infected ranch from which all cattle had been removed and which had not been restocked for approximately one year indicated that premises could be freed of the infection by this procedure. It was therefore decided to dispose of all the sheep for slaughter. This was done on Oct. 18, 1945, except for a few animals which were held in a quarantine pen, and no sheep or cattle were on the pastures or in the corrals for eleven months. The corrals and feeding areas were cleaned, and the surface material was removed from the principal feeding areas.

In November, 1946, the area was restocked with 110 ewes. In February, 1947, a johnin test was applied to all the sheep, with negative results in all cases. On Aug. 27, 1948, all the sheep (about 140) were tested, with 4 reacting positively. These 4 sheep were killed, and no lesions were

found at autopsy. No acid-fast organisms were found in sections of the intestinal mucosa. Smears were negative for *Mycobacterium paratuberculosis*, but in 3 of these sheep the smears from the intestinal mucosa showed the presence of acid-fast organisms of another type. They were somewhat larger than Johne's bacillus, short thick rods with rounded ends.

No further testing was done until Feb. 10, 1950, when all the sheep in the flock were negative to the johnin test. Another test was made on Dec. 14, 1950. Of a total of 180 tested, 1 ewe reacted positively. She was isolated and held for retest, which again resulted in a positive reaction on April 16, 1951. On June 29, 1951, this ewe and her two-month-old lamb were tested again, with no reaction developing.

#### RESULTS

It is believed that the sheep and the premises are now free from the infection of Johne's disease. No clinical cases have developed since the area was restocked in November, 1946. In the three johnin tests of the flock made since restocking (Feb., 1947; Aug., 1948; and Feb., 1950), only five reactions to johnin have been recorded. Four of these occurred in the test made in August, 1948; in smears from the intestinal mucosa of 3 of the reacting sheep, unidentified acid-fast organisms were found, which may have been responsible for the sensitization to johnin. The fifth reaction occurred in 1 sheep of a total of 180 tested in December, 1950. The reaction consisted of a large diffuse soft swelling which was considered atypical. On a retest in April, 1951, another atypical diffuse swelling was obtained, but there was no reaction to a third injection made in June, 1951. On July 17, this ewe was slaughtered. Postmortem examination of the intestine showed no gross lesions and smears from the mucosa of several areas in the ileum were negative for *Mycobacterium paratuberculosis*. These smears did show a few isolated individuals of the large, round-ended, acid-fast rod seen in 3 other reacting sheep.

#### SUMMARY

The history of this outbreak of Johne's disease in sheep indicates that where sheep run as a farm flock become infected with Johne's disease, the infection can be elimi-

nated from the farm by disposing of all the sheep, and leaving the area free from sheep or cattle for one year before restocking.

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### The Rapid Spread of Disease by Modern Transportation

WILSON HENDERSON, B.S.A., M.S.A., D.V.M.

Lafayette, Indiana

This brief report serves one purpose only: i.e., it is an example of the effects of modern rapid transportation on the spread of disease. Arizona paracolon 7:1, 7, 8 was isolated from sick poult submitted from five different farms in southern Indiana. These poult were all hatched in the same hatchery and were from fertile eggs flown from California. When Dr. P. R. Edwards of the Enteric Bacteriology Laboratories at Chamblee, Ga., identified this organism, he reported that it had been identified in only two areas in the United States; the district in California from which these turkey hatching eggs had come, and from Minnesota. With this, and the absence of evidence suggesting any other source of this pathogen, it seems logical to assume that in less than twenty-four hours this organism was transported from California; and after a month had passed, infections had been set up on at least five Indiana farms separated by 30 or 40 miles.

The following paragraphs report more details on this case and two other similar cases of spread of disease through transportation:

On March 21, April 9, and May 1, 1951, poult from five different farms were presented to the Purdue Animal Disease Diagnostic Laboratory. These poult ranged in

age from 9 to 15 days. The owners reported that serious mortality started when the poult reached 6 to 12 days of age. The reported mortality in the first two weeks ranged upward to 15 per cent. The most common symptoms were diarrhea and droopiness followed by death. On post-mortem examination, the livers were found to be slightly enlarged and greenish-gray. Arizona paracolon 7: 1, 7, 8 was isolated at this laboratory and later positively identified by Dr. P. R. Edwards. The poult were treated with sulfamethazine and the death loss was negligible by the time the poult were 4 weeks of age.

A similar case of the spread of another type of Arizona paracolon infection in chickens by transportation from North Carolina was reported by Dr. H. E. Moses in the Annual Experiment Station Report of Purdue University (1949). Similarly, in 1951, the Purdue Animal Disease Diagnostic Laboratory isolated *Salmonella gallinarum* from poult on three different farms. The disease had originated in a single hatchery to which fertile eggs had been shipped from outside the state.

As a result of information accumulated through the mastitis control program, and clinical use by hundreds of New York State practitioners, the most effective and popular preparation for routine quarter therapy consists of either 100,000 or 200,000 units of crystalline penicillin G (not procaine) and 1/5 Gm. of dihydrostreptomycin in 20 cc. of a neutral pH inhibitory vehicle such as penic (Wallace Lab.).—E. W. Tucker, D.V.M., Ithaca, N. Y.

In chicks, growth acceleration due to feeding antibiotics results in a 10 to 15 per cent greater weight at approximately 4 weeks of age.

Turkey poult respond more dramatically to the feeding of antibiotics, showing stimulation of 30 to 40 per cent at approximately 6 weeks of age.—F. W. Hill, Ph.D., Ithaca, N. Y.

Each year in the United States about 40,000 persons are bitten by rabid animals and are required to receive the Pasteur treatment.

From the Department of Veterinary Science, Purdue University, Lafayette, Ind.

## Soremuzzle of Sheep

W. T. HARDY, D.V.M., and D. A. PRICE, D.V.M.

Sonora, Texas

MANY FLOCKS of sheep in western Texas are, at the time of this writing (summer, 1951), affected by a disease not previously described in the United States. The name "soremuzzle" is being used in the affected area, and although the authors are aware that a more appropriate medical term would be desirable, they hesitate to suggest a change until more is known about the nature of the etiology.

When the condition first made its appearance in July, 1948, workers at this experiment station unsuccessfully conducted transmission trials, attempted isolation through bacteriological procedures, and trial-fed a number of suspected plants.<sup>1</sup> Only about 20 cases could be made available for study at that time and, at the end of the third month, the condition had apparently disappeared. No cases were seen in 1949, and in 1950 only 2 affected animals were called to our attention. Attempts at transmission were again unsuccessful in 1950.<sup>2</sup> On the first day of June, 1951, we were requested to investigate what proved to be the first appearance of the disease in this year. Within the following four weeks, our records show that one or both of us had personally established a positive diagnosis on 20 ranches, had held telephone consultations regarding the condition with five veterinarians, and had answered inquiries from 22 ranchers who described the symptoms and lesions so well as to leave little doubt as to the probable diagnosis.

Transmission trials are again under way, but this preliminary report is made with the thought that it will serve to alert other workers should the condition appear elsewhere.

**Distribution.**—The present outbreak involves about 15 western Texas counties. This represents considerable variation in altitude, from only several hundred feet to somewhat over 2,000 ft. Flora, too, varies from the well-known types of pasture grasses to areas of semiarid nature.

Superintendent (Hardy) and assistant veterinarian (Price) of Substation No. 14, Texas Agricultural Experiment Station, Sonora.

Printed with permission of the administration of the Texas Agricultural Experiment Station, College Station.

For the most part, the condition has appeared sporadically, sometimes on widely scattered ranches, but in some instances a number of adjacent ranches have been affected to such an extent as to suggest an epizootic.

Although the region abounds with Angora goats, none are known to have been affected.

**Etiology.**—The etiological agent has yet to be identified. From both veterinary practitioners and ranchmen have come suggestions and even claims regarding the cause. These have included viruses, bacteria, certain plants, conditions of drought,



Fig. 1—The dejected attitude, encrusted nose and muzzle, and nasal discharge are characteristic of soremuzzle. The two irregular white spots on the ground directly beneath the head are deposits of nasal exudate.

protein excesses, and others; but observations in the field, in addition to experimental work, would seem to preclude all but the first as being at all likely. Some of the most vociferous observers favored the theory that a plant such as the small milkweed (*Asclepias* spp.) was responsible, but after the condition appeared in the ram stud at this station, in animals that had not



been on pasture for ten months, little has been heard from that quarter.

*Symptoms and Lesions.*—Only the acute form of the disease is described, but one may observe any degree of affection, to the extent that the mild cases may be almost

Since body temperatures of sheep in this area are normally found to be as low as 98 F. and as high as 105 F., sore muzzle is not at present considered to be characterized by fever.

*Course of the Disease.*—Owners first be-



Fig. 2—Marked depression and rapid weight loss due to sore muzzle.

indistinguishable. Animals acutely affected may present the following symptoms and lesions, arranged according to their constancy. Symptoms: sero-catarhal to fibrino-catarhal nasal discharge; swelling of the lips, with tendency to bleed at the margins when handled; lameness; depression; inappetance; rapid loss of weight; and diarrhea. Lesions: hyperemia of entire oral mucosa; inflamed nasal septum, nostrils, and muzzle, with tendency for exudate to dry and crack the skin, causing slight hemorrhage; ulcers of varying size and irregular outline on dental pad, on tip of tongue, and immediately posterior to incisor teeth; inflammation of both the coronary and laminar corium of the hoof, seen clinically as a red zone or band, especially on white-hoofed animals, and most often near the bulb of the heel; inflammation of the corium at the root of the horn; and submaxillary edema. A limited number of necropsies have revealed, in addition, varying degrees of enteritis and cecitis; somewhat excessive abdominal and pericardial fluid; small areas of intramuscular hemorrhage in hind limbs; and degeneration of cardiac muscle. Because of the limited number, however, the significance of these findings is not yet certain.

Recorded body temperatures of affected animals range from 102 F. to 104.5 F.

come aware of affected sheep when they see the rapid weight loss, the inflamed muzzles, and the affected gait. Morbidity rates are apparently less than 30 per cent and probably average about 10 per cent. As suggested before, however, very mild forms may exist and these are not readily recognizable where flocks of hundreds or thousands of sheep are involved. The course of the disease is estimated to be ten to twenty-one days, and the flock may be considered out of danger within four weeks of the onset. It is interesting to note that suckling lambs seem to be much less involved than older animals.

By far the majority of fatal terminations are due to either secondary pneumonia or screwworm infestation of the lips and muzzle. The remaining fatalities are due to extreme weakness and emaciation.

*Diagnosis.*—The condition has been mistaken for and must be differentiated from soremouth, effect of eating irritating plants, effect of eating cactus, range stiffness, pneumonia, and hemonchiasis. Many hundreds of animals have been subjected unnecessarily and at considerable cost to soremouth vaccination, penicillin injections, and drenching. During an outbreak, a diagnosis is commonly and correctly made on the basis of the presence of oral ulcers and inflamed muzzle.

It seems appropriate to mention here that there are striking similarities between sore-muzzle as described herein and blue tongue, a disease of sheep in South Africa and several other regions of that hemisphere. The latter disease was described by Hutcheon<sup>3</sup>



Fig. 3—Encrusted muzzles and swollen tongue.

in 1902, Spruell<sup>4</sup> in 1905, Dixon<sup>5</sup> in 1909, and Theiler<sup>6</sup> in 1906. Descriptions more readily accessible to American readers are provided by Gambles<sup>7</sup> and by Thomas and Neitz.<sup>8</sup>

**Treatment and Management.**—Although the first few treatment trials show promise for both aureomycin and antihistamines, the work has not involved a sufficient num-



Fig. 4—Zone of inflammation.

ber of animals to warrant definite recommendations. At present, it is recommended that the owners watch their flocks closely in order to treat screwworm cases promptly and that only the most acutely affected animals be hauled home for good nursing care.

The usual precautions which pertain to infectious diseases are felt to be appropriate; viz., nonintroduction of new sheep to the premises, proper disposal of carcasses, and avoidance of unnecessary changes in pasture.

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**Comparison of Varying Sizes of Phenothiazine Particles.**—A small experiment on 12 sheep demonstrated that six phenothiazine preparations of different particle sizes were all highly efficient when given in full therapeutic doses to eliminate *Trichostrongylus axei* from sheep. The difference in particle size now supplied, compared with those formerly available, can not therefore be blamed for the decrease in efficiency of phenothiazine in the treatment of parasitic gastritis of sheep.—*Brit. Vet. J.*, Sept., 1951.

**Brucella organisms far outnumber all other agents as causes of infection in laboratory workers.**—*Am. J. Pub. Health*, July, 1951.



## Studies on Newcastle Disease. IX. Experimental Vaccination of Chicks Against Newcastle Disease

PAUL D. BEAMER, D.V.M., Ph.D.

*Urbana, Illinois*

A STRAIN OF Newcastle virus, L2010, was isolated from an Illinois poultry flock in 1948. This strain produced mild respiratory symptoms, egg production was only slightly reduced, mortality was negligible.

Many efforts have been made to attenuate Newcastle virus by adapting it to species other than chickens. Following the leads of Acevedo and Mendoza,<sup>1</sup> Komarov and Goldsmith,<sup>2</sup> Millen,<sup>3</sup> Clancy, Cox, and Botorff,<sup>4</sup> and Markham, Cox, and Botorff,<sup>5</sup> Newcastle virus, L2010, was serially passed by suballantoic inoculation for 56 generations in 11-day-old duck embryos. The allanto-amniotic fluid was harvested from dead or moribund duck embryos from each generation and tested for hemagglutinating activity. Generations 27, 30, 33, 35, 38, 40, 43, 45, 48, 50, 51, and 55 were selected for critical immunologic study.

Virus from these duck embryo generations was used as an immunizing agent in the form of untreated allantoic-amniotic fluid diluted 1:1,000 and as an adsorbate vaccine.<sup>1,3</sup> Adsorbate vaccine was prepared as follows: 500 ml. distilled water, 1.25 Gm. of borax, and 1.5 Gm. of potassium alum were mixed together and boiled. After cooling to room temperature, 0.5 ml. of allanto-amniotic fluid from an infected embryo was added and the flask gently but thoroughly agitated.

A total of 1,892 chicks from 2 days to 4 weeks old were used in vaccination experiments.

Chicks from both Newcastle-susceptible and Newcastle-immune parents were vaccinated in parallel experiments. Two days before vaccination, blood samples were collected by cardiac puncture from 6 to 10 chicks from each group and the hemagglutination-inhibition reaction determined. The vaccines were administered by instillation

of 0.1 ml. of vaccine intranasally or by atomization (spray) of the inoculum into the atmosphere. To administer the vaccine by atomization (spray) the chicks were placed in a cardboard box and all edges of the box were sealed with gummed paper. A small hole was made near the top of the box through which the end of a small, hand-operated atomizer was introduced. Approximately 1 ml. of vaccine was atomized into the box for each 0.1 cm. of space. The box was opened at the end of three minutes.

Vaccinated chicks were observed from fourteen to thirty-four days following vaccination. Equal numbers of unvaccinated chicks were placed in each cage as a check on aerosol contamination. Other unvaccinated chicks from the same hatch were kept in a separate brooder house for the duration of each experiment. These unvaccinated chicks were considered as pen controls and brooder controls respectively.

Due to limitations of time and equipment, chicks in different experiments were challenged fourteen to thirty-four days after vaccination. All vaccinated and control chicks were challenged by intramuscular injection of virulent Newcastle virus. In one experiment, the challenge consisted of 200 I.d.<sub>50</sub> of Newcastle virus C11914.\* In three experiments, the challenge consisted of 3,000 I.d.<sub>50</sub> of Newcastle virus GB-Texas—1948.\* In three other experiments, the challenge consisted of 1,000 I.d.<sub>50</sub> of Newcastle virus GB-Texas—1948.

Two-hundred I.d.<sub>50</sub>'s of C11914 was considered an inadequate challenge because of inconsistent kill in unvaccinated controls.

After 27 duck embryo generations, Newcastle virus L2010 caused no significant symptoms following intranasal instillation in chicks under 4 weeks old from Newcastle-immune hens. Forty-one of 48 of these chicks (89%) survived challenge with 200 I.d.<sub>50</sub> of C11914; while 17 of 48 pen controls

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Contribution from the Illinois Agricultural Experiment Station as a collaborator under North Central Regional Agricultural Experiment Station cooperative research project entitled NC6.

\*Obtainable through the North Central Region Technical Committee for the study of Newcastle Disease Repository, Department of Veterinary Science, University of Wisconsin, Madison.

(36%) and 5 of 12 brooder controls (41%) survived a similar challenge. In a parallel experiment, 77 of 150 (51%) chicks from Newcastle-susceptible hens died following intranasal instillation of vaccine prepared from twenty-seventh duck embryo generation virus. Fifty-eight of 73 of the surviving chicks (79%) withstood 3,000 I.d.<sub>50</sub> of GB-Texas—1948; while 67 of 87 pen controls (77%) and none of 50 brooder controls survived a similar challenge.

All chicks vaccinated by atomization (spray) with allanto-amniotic fluid (1:1000) or adsorbate vaccine prepared from the twenty-seventh duck embryo generation virus died within ten days following vaccination.

Vaccination trials with later duck embryo generations showed a progressive decrease in pathogenicity and immunogenicity for chicks when vaccinated by intranasal instillation or atomization (spray). Allanto-amniotic fluid, 1:1,000, or adsorbate vaccine prepared from fifty-fifth generation duck embryo virus caused no deaths when used either by intranasal instillation or atomization in chicks from susceptible or immune hens. However, only 6 of 249 of these chicks survived intramuscular challenge with 1,000 I.d.<sub>50</sub> of GB-Texas—1948.

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Viomycin is of low toxicity and is non-irritating when given parenterally. Dogs tolerated daily injections of 100 mg. per kilogram of body weight for more than 150 days.—*Proc. Staff Meet., Mayo Clinic, Jan. 31, 1951.*

## Parathion Poisoning in Geese

M. L. LIVINGSTON, D.V.M.

Hartford, Michigan

Recently, I was called to examine some dead and dying geese. The client had just completed spraying his orchard with a mixture of equal parts of parathion and DDT, and some of the spray had drifted into a pasture which was being used for geese. There were 60 adult and 45 half-grown geese, and about 70 goslings. Five or 6 of the adult birds were showing symptoms of acute poisoning, as were about half of the half-grown geese. None of the goslings was affected, apparently due to the fact that they were penned in a far corner of the pasture.

Symptoms observed were vomiting, staggering, and later paralysis of the legs (but not the wings). The necks seemed to be limber, and the birds were unable to raise their heads. There was also a copious amount of salivation and a continual gasping for air. Bloody droppings were in evidence in the area. The adult birds, particularly, evinced a great desire for water. Two had reached a small pond and had tried to drink, but had been unable to raise their heads out of the water and had drowned.

By the time I arrived at the farm, 1 adult and 7 half-grown birds had died. There were 3 sick adults and about 20 sick half-grown birds. Atropine sulfate was administered intermuscularly and, in some cases, intraperitoneally. Dosage was 1/150 of a grain of the drug in 2 cc. of water for adults, and 1 cc. of the same mixture for the half-grown birds. In two hours, most of the symptoms had disappeared, but a few birds still showed some of the effects of the poisoning. Accordingly, 2 drops of tincture of belladonna in a tablespoonful of water was administered to the adults. Half-grown birds received 1 drop of the tincture in a tablespoonful of water.

The next morning, the owner advised that all birds were normal and that none of the birds that had been treated had died.

Dr. Livingston is a practitioner in Hartford, Mich.

Whole blood in our clinic is one of the most important therapeutic agents we have.—*T. H. Brasmer, D.V.M., Illinois.*

## Chloromycetin Therapy in Veterinary Medicine

J. W. EASTMAN, D.V.M.; A. S. SCHLINGMAN, D.V.M., M.S.;  
MARY C. MANNING, B.S.; F. E. EADS, D.V.M., M.S.

Rochester and Detroit, Michigan

THE USE OF chloromycetin\* in the treatment of diseases caused by a variety of pathogens in many species of domestic animals opens a new field of antibiotic chemotherapy. With its broad spectrum of activity, it is not only extremely active against gram-negative microorganisms, but also against certain gram-positive microorganisms, rickettsiae, and viruses.

Schirmer *et al.*<sup>1</sup> found chloromycetin highly effective against pulmonary infections, bacterial cystitis, infectious panleukopenia, and certain other acute bacterial infections. They also found it effective against complications due to the secondary invaders of canine distemper and in acute bacterial gastroenteritis. This work has been confirmed by Gasow *et al.*<sup>2</sup>

Magrane<sup>3</sup> reported that chloromycetin gives promise of being useful in canine ophthalmology. He found that when used locally, either as an aqueous solution or incorporated in an ointment, it does not delay regeneration of corneal epithelium and will penetrate through an intact cornea. Similar results have been reported by Leopold.<sup>4</sup> He also stated that chloromycetin was effective in cases of conjunctivitis, keratitis, herpes zoster ophthalmicus, and various other ocular infections. These results are confirmed in this study.

This is a report on the use of chloromycetin in large animals and in dogs.

### DISEASES OF LARGE ANIMALS

**Hemorrhagic Septicemia.**—Chloromycetin was used in 6 yearling Holstein-Friesian heifers and an 800-lb. bull in the treatment of this disease. *Pasteurella multocida* was isolated from 1 of the animals. Five grams of chloromycetin were injected intravenously into each of 5 heifers twice daily for one to four days. One heifer also received 2 Gm. of chloromycetin in a single oral dose. Another animal received no chloromycetin intravenously but was given 2 Gm. orally in a single dose. All animals recovered. Four of the 6 animals recovered in approximately twenty-four hours, while 1 heifer required two days treatment, and

another required four days. An 800-lb. bull suffering from shipping fever was given 10 Gm. of chloromycetin intravenously. In eighteen hours, the temperature had dropped six degrees to normal. Although probably not necessary, a second 10-Gm. dose was given at the time the normal temperature was recorded. Twenty-four hours later, recovery was complete.

**Chronic Conjunctivitis.**—An 8-year-old Thoroughbred cross with chronic conjunctivitis was treated with 5 per cent chloromycetin ointment twice daily for almost two months without effect. Other ointments including penicillin, sulfanilamide, and sulfathiazole had previously been used without results.

**Retained Placental Membranes.**—A single dose of two 250-mg. chloromycetin capsules was placed in the uterus of each of 4 cows after removal of retained placental membranes. No infection occurred in 3 of the 4 animals. However, these results are not conclusive since there were no control animals. In the fourth animal, the infection present in the uterus continued for approximately two weeks.

**White Scours of Calves, Infectious Diarrhea of Colts and Lambs.**—Eight calves, 1 colt, and 4 lambs with infectious diarrhea were treated with chloromycetin. Five hundred milligrams of the antibiotic were administered orally two to three times daily to each animal. Complete recovery was obtained in 4 calves in approximately twenty-four hours. One 1-day-old calf showed no change and 2 other calves died in twenty-four to forty-eight hours. Another calf gradually recovered but relapsed after two months and died.

A day-old Belgian colt with a severe diarrhea was given 1 Gm. of chloromycetin orally once daily for two days with subsequent complete recovery.

Four lambs, weighing approximately 10 lb. each, received 50 mg. of chloromycetin twice daily for two days. Improvement was noted. Complete recovery followed the administration of 250 mg. of the antibiotic twice daily for another two days.

\*Parke, Davis and Company trade mark name for chloramphenicol.

Dr. Eastman is a practitioner in Rochester, Mich. Drs. Schlingman, Eads, and Miss Manning are with Parke, Davis and Co., Detroit, Mich.

**Metritis.**—One cow suffering from chronic metritis due to a coliform organism was treated with a single dose (1 Gm.) of chloromycetin suspended in 10 cc. of water and injected directly into the uterus. No improvement followed. Two grams used in the same manner in another cow suffering from acute metritis and a second dose four days later resulted in slight improvement.

#### DISEASES OF SMALL ANIMALS

**Conjunctivitis and Keratitis.**—Three dogs showing these chronic conditions were treated with an ointment containing 5 per cent of chloromycetin twice daily for a week to ten days. All 3 dogs recovered. One dog had previously failed to respond to the use of sulfathiazole ointment and later to an ophthalmic ointment containing holocaine, 1 per cent, with epinephrine, 1:50,000.

**Gastroenteritis.**—Seven dogs were treated orally with chloromycetin. Bacteriological examination on 3 of the dogs showed 2 of them to have an *Escherichia coli* infection and the other a *Proteus* infection. Chloromycetin was administered at the rate of 33 to 139 mg. per kilogram of body weight in divided doses (with a mean of 86 mg.). Five dogs received one dose per day, 1 received two doses per day, and 1 received three doses per day. Complete recovery resulted in every animal in twenty-four to forty-eight hours after one or two days treatment.

**Canine Distemper.**—In this group, 13 dogs were treated orally with chloromycetin. The dosage schedule ranged from 30 to 80 mg./kg. of body weight (with a mean of 55 mg./kg.) and was administered in divided doses two to three times per day for seven to twenty-one days. Seven dogs affected with the secondary invaders of distemper recovered, 2 died; and 1 showed no change. Two dogs showing chorea were also treated. Neither of these showed any improvement and 1 was eventually destroyed. One dog, a 4-month-old male Dachshund showing clinical distemper with convulsions, was given chloromycetin at the rate of 166 mg./kg. of body weight three times daily for four days with resultant complete recovery. These results agree favorably with those reported by Schirmer *et al.*<sup>1</sup> and Gasow *et al.*<sup>2</sup>

**Otitis Externa.**—One dog having a *Micrococcus pyogenes* var. *albus* (*S. albus*)

infection in his ear accompanied by a purulent, bloody discharge and a marked desquamation of the epithelial cells in the ear canal was treated with 5 per cent chloromycetin ointment twice daily. This dog had been treated periodically for four months without results. Although there was some improvement in the condition following treatment, surgery was eventually performed.

A cat with otitis associated with a conchal hematoma was treated daily with a 10 per cent chloromycetin ointment. Gradual improvement resulted until complete recovery occurred.

**Acrobystitis.**—One dog with a *Micrococcus pyogenes* var. *albus* infection of the sheath was successfully treated with 5 per cent chloromycetin ointment applied locally for four days.

**Metritis.**—A Spaniel cross with infective metritis following estrus was successfully treated orally with 33 mg. of chloromycetin per kilogram of body weight in three divided doses.

#### DISCUSSION

Cattle affected with hemorrhagic septicemia (shipping fever) required one to four daily doses of chloromycetin to bring about recovery.

The majority of infectious diarrheas in calves responded to oral chloromycetin therapy within twenty-four hours following two or three doses. A colt and lambs suffering from the same condition were apparently normal after two to four days of treatment.

All the dogs suffering from infectious gastroenteritis recovered completely following one or two days oral treatment with chloromycetin.

Results following oral administration of chloromycetin to dogs showing evidence of infections secondary to distemper were variable. The majority of the animals recovered after four to twenty-one days therapy.

Five and 10 per cent chloromycetin ointment was effective in the treatment of conjunctivitis, keratitis, and acrobystitis, recovery occurring following a week to ten days of treatment.

A case of metritis in the dog was treated successfully by oral administration of chloromycetin for one day, but instillation of 1 Gm. into the uterus of a cow suffering

from the same condition apparently had no beneficial effect. Another cow improved after two uterine injections of 2 Gm. each at four-day intervals.

#### SUMMARY

Clinical trials with chloromycetin against several animal diseases have demonstrated the effectiveness of this antibiotic in a wide variety of infections. This paper cites results obtained in both large and small domestic animals with such disease conditions as hemorrhagic septicemia (shipping fever), conjunctivitis and keratitis, retained placental membranes, metritis, infectious diarrheas, otitis externa, acrobystitis, and the secondary invaders of canine distemper. Additional investigations will undoubtedly demonstrate a wider application in animal diseases than is now known.

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<sup>2</sup>Gasow, F., Oja, E., and Eads, F. E.: Chloromycetin in the Treatment of Complications Due to the Secondary Invaders of Canine Distemper and in Acute Gastroenteritis. *North Am. Vet.* (in press).  
<sup>3</sup>Magrane, W. G.: An Evaluation of the Use of Antibiotics in Canine Ophthalmology. *North Am. Vet.*, 32, (1951):169.  
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### The Effect of Iodides on Phenobarbital Narcosis

The narcosis produced in the white rat by phenobarbital sodium is prolonged and intensified by the parenteral or oral administration of iodides. The observation was made with sodium iodide and organidin. The intraperitoneal injection of solutions of sorbitol, glycerin, and sucrose also prolongs and intensifies the narcosis produced by phenobarbital sodium.—*J. Am. Pharm. A.*, October, 1951.

The high therapeutic efficiency of newer antibiotic drugs, such as chloramphenicol, aureomycin, and terramycin, has completely changed the viewpoint regarding mortal danger associated with laboratory work on rickettsial agents.—*Am. J. Pub. Health*, July, 1951.

### A New Class of Hypnotics — Unsaturated Carbinols

Recent pharmacological investigation has shown that certain ethinyl tertiary carbinols exhibit significant hypnotic activity in several species (mice, rats, guinea pigs, rabbits, cats, dogs, and monkeys). Hypnotic effects followed oral as well as parenteral administration of the compounds.

Clinical laboratory tests indicated that there were no pathological changes attributable to the drug.—*Science*, Oct. 12, 1951.

### Streptococcic Mastitis in the Goat

A histological examination was made of the udders of 39 goats. The teat canal of one side of the udder had been inoculated with heat-killed or living *Streptococcus agalactiae*.

Minimal reactions were characterized by an early migration of neutrophils into the secreting acini, followed by a slight macrophage-fibroblast reaction in the interacinar tissue. These changes were regarded as nonspecific. There was no evidence of penetration of streptococci through the duct walls.

Marked reactions were characterized by an early migration of neutrophils into secreting acini. Penetration of streptococci through the duct and acinar epithelium to the lymphatic channels was brief and the organisms were rapidly destroyed, but it initiated a marked macrophage-fibroblast reaction. There was extensive damage to secreting tissue and very early evidence of involution.

There was no essential difference between histological findings in goats infected experimentally and those reported in the literature in natural cases of bovine streptococcic mastitis.—*J. Comp. Path. and Therap.*, April, 1951.

Under certain conditions of management, aureomycin fed in small amounts appeared to aid in preventing and controlling calf scours and improved the rate of gain in calves up to 12 weeks of age, according to a report from the Kansas State College department of dairy husbandry. However, the drug causes loss of appetite and other undesirable effects in mature cattle and sheep.



## Clinical Use of Aureomycin in Some Bovine and Equine Infections

W. H. CHIVERS, D.V.M.

Ames, Iowa

A WIDE VARIETY of infections is found in the clinical material submitted to the Veterinary Clinic at Iowa State College. While some of these infections present no particular problems, others have consistently proved stubbornly resistant to such agents and methods as have heretofore been available to the clinician.

Since early 1950, the antibiotic, aureomycin, has been used in the treatment of a wide variety of cases. This report covers its use in the bovine and equine species. Where other types of therapy have been unsuccessful in the past, or where drastic surgical procedures with unfavorable prognosis would be indicated, aureomycin treatment has been instituted. Many cases were of long standing with permanent pathological tissue changes that had failed to respond to other treatment and had been presented as a last resort.

### TREATMENT

In all cases here reported, aureomycin hydrochloride, buffered with sodium glycinate, was reconstituted with water for injection U.S.P., and injected intravenously. In adult herbivores, oral administration is contraindicated as it may cause disadvantageous digestive disturbances. In the buffered hydrochloride form, aureomycin fails to be absorbed in sufficient amount to be effective and is irritating to tissues when injected intramuscularly, subcutaneously, or intraperitoneally. For this reason, it should be administered only intravenously. Care should be taken to prevent perivascular leakage as transient inflammatory reaction may occur, but necrosis or sloughing have not been noted.

The recommended dosage is 5 mg. per pound of body weight, administered at 24-hour intervals. In order to obtain information on dosage and length of treatment, particularly in the early work, various dosage schedules were followed and continued to effect, depending upon response to treat-

ment. In some cases, the recommended dosage was increased by as much as 500 per cent, with good results and no toxic effect.

### CASE REPORTS

*Corynebacterium Pyogenes Infections.*—Infections associated with *Corynebacterium pyogenes* have heretofore proved most troublesome from a treatment standpoint. This organism has been isolated from practically all parts of the bovine body. Short of surgical amputation of infected parts, where such procedures were feasible, little benefit could be obtained, in my experience, by methods of treatment known up to the present time.

To date, 14 cases of necrotic laryngitis in cows have been treated with aureomycin. Ages ranged from 4 months to 9 years. In 2 cases, infection had been noted one and two days before presentation for treatment, but the majority had been affected for longer periods, up to six weeks. Previous treatment with sulfonamides, penicillin, or combinations of these drugs, or iodine preparations, in 6 animals, had had no apparent effect.

Symptoms noted included swelling and inflammation of the larynx, difficult respiration with "roaring," inappetence, drooling, mucopurulent nasal exudate, foul breath, loss of weight and condition, and elevated temperature. *Corynebacterium pyogenes* was isolated from cultures examined from 4 of the cases. Although symptomatic diagnoses were made in the remaining cases, some animals were from herds where positive cultures had already been obtained, or from herds where *C. pyogenes* had frequently been a source of trouble. Table 1 summarizes the treatment and results obtained in this group. Improvement was noted as early as two days in some cases. Three animals were apparently normal on the fourth day from the start of treatment, and 2 on the fifth. In the remainder, there was gradual improvement

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with return to normal by the eighth to the twenty-fourth day. These were cases with an extremely unfavorable prognosis under any previous type of treatment.

Aureomycin was administered to 6 animals with suppurative conditions, localized in various parts of the body, and to 1 cow in a moribund condition from an advanced case of septic mastitis. *Corynebacterium pyogenes* was isolated in pure culture in each case and, in addition, an unclassified *Streptococcus* in 2 cases. Table 2 presents the details of treatment and the results obtained. All suppurative conditions healed satisfactorily with a minimum of surgical drainage and scarring. There were no postoperative complications where such procedures were used. In the mastitis case, which was moribund when aureomycin treatment was instituted, the cow lived and

gained weight, but normal function of the secreting tissues of the mammary gland was not complete.

**Calf Scours.**—A diagnosis of calf scours was made in 10 calves, 3 days to 6 weeks of age. The majority of these calves were from herds with a history of severe losses from scours. Elevated temperatures were usually noted. There was profuse, fluid diarrhea with the characteristic calf-scur odor, inappetence, depression, emaciation and, in a few cases, cough, dyspnea, and nasal discharge. One 3-day-old animal was moribund and the body was cold to touch. In a 6-week-old Hereford bull calf, where the condition had been present since soon after birth, there was an accompanying rachitis with the extremities of the long bones enlarged and the ribs distorted.

TABLE 1—Treatment of Necrotic Laryngitis in Cattle with Aureomycin Administered Intravenously

Case (No.)	Breed, sex, wt.	Age	Duration prior to aureo. treatment	Previous treatment—no response	Pathogen isolated	Aureomycin treatment—mg./lb. days		Results
1	Hereford F, 275 lb.	8 mo.	10 days	sulfapyridine, potassium iodide, penicillin	C. pyogenes	5.0 2.5	4 7	Conclusion treatment—appetite much improved, resp. nearly normal; 13th day, breathing normal, general appearance good; 23rd day, still apparently normal.
2	Hereford F, 350 lb.	8 mo.	1 mo.	same as above	C. pyogenes	5.0 2.5	4 7	Sublaryngeal abscess drained and seton inserted. Conclusion treatment—appetite much improved, swelling smaller; 13th day, resp. normal, gen. appearance good; 16th, wheezing; 20th, wheezing, slight drainage abscess; 23rd, norm.
3	Hereford M, 350 lb.	8 mo.	1 mo.	same as above	none—same herd as # 1 and 2	5.0 2.5	4 7	Improved resp., appetite good; 20th day, larynx small; 24th, resp. nearly normal.
1362	Hereford steer, 1,000 lb.	1 yr.	7	procaine penicillin	none	5.0 2.5	4 1	2nd treatment day, eating; 3rd, roaring less, appetite improved; 5th, apparently normal.
10972	Hereford bull, 1,500 lb.	5 yr.	4 days	—	none—C. pyogenes from other cases same herd	3.3 1.7 3.3	4 1 1	6th day, roaring inspiration less evident; 1st appetite & rumination good; 8th, app. & rum. normal; respiratory sound decreased, but still abnormal.
1619	Hereford F, 500 lb.	6 mo.	1 day	—	none	5.0 2.0	4 1	3rd day, dyspnea and roaring markedly improved; 5th, apparently normal.
24186	Angus F, 300 lb.	6 mo.	3 wks.	tetracycline	none	4.0	3	4th day, improvement such that treatment was discontinued; 13th, apparently normal.
17024	Guernsey heifer, 500 lb.	1 yr.	1 wk.	—	none	5.0 none 5.0	2 2 2	Reaction to injection, some evidence of shock; 3 days following last treatment, in better condition, resp. nearly normal, abnormal size larynx reduced one-third.
22238	Hereford bull, 500 lb.	9 mo.	6 wks.	iodine therapy	none	5.0	5	3rd treatment day, breathing better; 4th, normal.
22552	Hereford steer, 500 lb.	1 yr.	4 wks.	penicillin, sulfonamides	none	5.0	3	4th day, resp. normal, appetite improved, animal alert.
22576	Hereford F, 1,600 lb.	9 yr.	2 days	—	none	3.0	4	Notable improvement 3rd day; apparently normal 4th.
22898	Angus steer, 500 lb.	1 yr.	1 mo.	—	C. pyogenes	6.0 2.5	5 1	Marked improvement following 2nd dose; gradual improvement to 9th day; slight respiratory abnormality.
22899	Angus steer, 500 lb.	1 yr.	1 wk.	—	C. pyogenes	6.0 2.5	5 1	Marked improvement following 2nd dose; gradual improvement to 9th day; apparently normal.
24688	Angus F, 800 lb.	18 mo.	3 wks.	—	none	3.0	4	Improvement was so great that treatment was discontinued.



TABLE 2—Treatment of Suppurative Conditions in Cattle with Aureomycin Administered Intravenously. *Corynebacterium Pyogenes* Isolated in All Cases

Case (No.)	Breed, sex, wt.	Age	Diagnosis	Duration	Treatment mg./lb. days		Remarks
18581	Hereford F. 1,200 lb.	8 yr.	Abscess rt. side abdomen with small sinus tract	1 wk.	4.5 none 7.0	5 1 1	Abscess continued to spread. Incisions made 22 in. apart, drained 2 gal. pus. No post-operative complications. Cow nursing calf and neither was sick or off feed.
20364	Holstein-Friesian F. 1,000 lb.	3 yr.	Suppurative arthritis. X-ray—Extensive involvement entire fetlock joint. Discharging.	several days	5.75 2.5	3 4	Temp. normal, appetite & milk prod. good. Pus discharge lessened but did not stop; 2 small abscesses drained. Still lame. X-ray 4 days post-treatment, condition no worse. Discharged 10th day; 38-day follow-up—foot normal; normal milk prod. 1 wk. after discharge. Prognosis grave when presented.
17852	Holstein-Friesian F. 600 lb.	1 yr.	X-ray—osteomyelitis anterior rt. metatarsus encapsulated in callus, swollen.	2 mo.	4.0	3	Surgical removal, antiseptic powder & packs—foul smelling exudate, granulation not proceeding desirably. After 3rd dose, suppuration nearly ceased. Granulations pink, healthy and nearly filling wound; 4 days, discharged, wound healing.
16385	Hereford M.	5 wk.	Hard, tough, swelling masseter muscles. 4 fistulous openings. Also in sub-mandibular area.	since birth	5.0 none 5.0 none 5.0	5 1 1 1 1	Lower swelling incised and pus evacuated; 4th treatment day, large swelling softer; incised abscess draining; 10th day, all openings healed, 1 no discharge.
24127	Hereford M. 500 lb.	10 mo.	Swelling left cheek—opened surgically, refused to heal—developing tracts.	unknown	1.0	4	6th day, exudate ceased, fistulous tracts disappeared, wounds granulating.
24127	Shorthorn F. 500 lb.	5 mo.		unknown	1.5	4	
16157	Holstein-Friesian F.	3 yr.	Septic mastitis.	unknown	5.0 2.5	3 3	Penicillin 4 days—moribund; 1 teat injured, black and necrotic; all others hard; 2nd treatment day, improvement appetite and condition. Conclusion of treatment, eating well, clear amber fluid injured teat, others normal. Since these cases usually die, believed that aureomycin saved cow's life without much favorable influence on mastitis.

Details of treatment and results are presented in table 3.

Marked improvement was evident in 8 calves on the second day, when they were alert and lively and feces were normal or nearly normal. Uneventful recovery followed in three to six days. While some improvement was noted in the moribund calf, death occurred on the fourth day. The rachitic calf received only one dose of

aureomycin and was discharged. On examination one week later, scours had ceased, appetite was good, and general condition was improved.

*Miscellaneous Infections.*—Very limited numbers of a wide variety of infections have been treated with aureomycin, as one purpose of this study was to gain information on indications for its use in practice. These cases were too few in number to

TABLE 3—Treatment of Calf Scours with Aureomycin Administered Intravenously

Case (No.)	Breed, sex	Age	Wt. (lb.)	Duration	Treatment mg./lb. days		Remarks
17193	Guernsey F.	3 wk.	.....	2 wk.	12.5	1	Improvement 2nd day; nearly normal 6th day.
17137	Brown Swiss M.	3 days	125	?	5.0	1	Moribund when presented; body cold to touch; 2nd day, could raise head; 3rd, drank milk; died 4th day.
18133	Holstein F.	1 mo.	75	?	6.0 30.0	2 2	Marked improvement after 2nd dose; 2nd treatment level given by mistake; no toxicity; apparently normal 5th day.
20503	Holstein F.	5 wk.	125	?	5.0	1	Improved 2nd day; apparently normal 3rd day.
22817	Holstein	3 wk.	90	2 days	5.0	1)	2nd day, alert and lively; feces nearly normal; appar. normal 3rd day.
22818	Holstein	3 wk.	90	3 days	5.0	1)	
22963	Holstein M.	3 wk.	100	3 days	5.0	2	2nd day, alert and hungry; gradual improvement; appar. normal 6th day.
23845	Holstein M.	6 wk.	75	several days	5.0	3	Conclusion of treatment, appar. normal except slight cough.
19173	Holstein F.	7 days	65	3 days	15.0	1	2nd day, feces firm; appar. normal 3rd day.
20410	Hereford M.	6 wk.	100	since soon after birth	5.0	1	Rachitis also present; 1 wk. post-treatment, scours ceased, appetite good, general condition much improved.

justify drawing final conclusions, but the results obtained indicate that aureomycin is a valuable drug for the veterinary clinician.

Favorable response has been noted in the treatment of 2 horses with alveolar periostitis and sinusitis, and 1 horse with sinusitis due to trauma. After a course of aureomycin therapy, all pus formation ceased and the odor of necrotic bone disappeared.

Two cows with clinical symptoms of listeriosis, without laboratory confirmation, showed an immediate response and made complete recoveries after a short course of aureomycin. A single dose of 5.0 mg. per pound was administered to 1 cow. The other received two doses of 5.0 mg. per pound each, and one dose of 2.5 mg. per pound, at 24-hour intervals. In a third cow showing similar symptoms, it was difficult to evaluate the treatment. This animal received two daily doses of approximately 6.0 mg. per pound each. Circling was not noted after the second day, but the head was still offset on the ninth day. Studies in dogs on the pharmacology of aureomycin indicate that this antibiotic can be demonstrated in the cerebrospinal fluid in concentrations bactericidal for *Listeria monocytogenes* six hours following intravenous administration of a therapeutic dose of the drug. This would indicate that frequent administration is necessary to maintain a therapeutic concentration of aureomycin in the cerebrospinal fluid of the diseased animal. Therefore, the intensity of treatment and the interval between doses should depend upon the severity of the infection and clinical response.

Excellent results have been obtained in the treatment of sinusitis in cattle following dehorning operations. Two yearling steers, which had been dehorned about one week earlier, were presented with edematous swelling of the head which interfered with respiration and ingestion. Depression, anorexia, drooling saliva, and elevated temperatures existed. *Clostridium septicum* was isolated in both cases. The frontal sinus was trephined in each case. One animal received 1,500,000 units of procaine penicillin in oil daily for six days, at which time the animal died. The other received aureomycin at the rate of 4.0 mg. per pound, intravenously, daily for three days. Two days post-treatment, the appetite was improved, edema was mostly cleared except

at the trephine opening, general appearance and alertness were greatly improved. The animal was discharged the following day apparently normal.

Interesting results have also been obtained in the treatment of mastitis, cystitis, and respiratory infections in both cattle and horses including those in the shipping fever group. The drug also appears to be of value in treating traumatic wounds of animals which are badly contaminated and showing indolent healing, as well as preventing the development of infection in such wounds when treated early.

#### COMMENT

In our experience, practically all horses have developed a loss of appetite on the second or third day of a course of intravenous treatment, which lasts for about four days after treatment is discontinued. The exact mechanism responsible for the digestive disturbances which have been noted following aureomycin therapy is unknown. It has been suggested that these disturbances may be due to the bacteriostatic effect of the antibiotic on the normal gastrointestinal flora. If such symptoms appear, therapy should not be discontinued for that reason alone, as these disturbances are usually transient, and return to normal function occurs after the drug is discontinued. It may be well to consider the combined use of adequate doses of B complex, parenterally or orally, in animals undergoing antibiotic treatment. Occasionally, a weakened or debilitated animal has exhibited signs of shock, sometimes to an alarming degree. In a year of observation, there has been no evidence of permanent toxic or injurious after-effects.

Results have ranged from excellent, sometimes dramatic, to none at all. It should be kept in mind that many cases were of long standing with poor prognosis, that had failed to respond to other treatment. When consideration is given to this fact, it would seem that this will be a valuable drug in veterinary practice.

*Intratracheal Penicillin Therapy in Calf Pneumonia.*—The intratracheal administration of penicillin as therapy for pneumonia in calves has been tried. Three case reports are given with two prompt recoveries and one fatality.—*Canad. J. Comp. Med. and Vet. Sci.*, July, 1951:172.

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# NUTRITION

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## Growth Stimulation Produced in Chicks by Surfactants

Certain surfactants have been found to produce an increased growth response in chicks. As part of a broad study on the use of distillers solubles in animal nutrition, it has been observed that these surfactants, when fed at levels ranging from 13 to 454 Gm./100 lb. mixed ration, will promote an increase in growth ranging to 12 per cent above the controls.

Evidence collected to date on B<sub>12</sub>-antibiotic-surface-active-agent supplementation, both alone and in various combinations, points to a similarity between the chick-growth response on antibiotics and surface active agents. Preliminary investigations of a possible synergistic effect between surfactants and B<sub>12</sub>-antibiotics supplements have been negative.—*Science*, Nov. 16, 1951: 523-524.

A marked decrease in wool production occurred, and the capacity to impart crimp to the wool fibers failed, in sheep maintained on copper-deficient rations.—*Nutr. Rev.*, October, 1951.

Cattle meet their requirement for the B-complex vitamins through synthesis of these factors by the microorganisms in the rumen. In the calf, however, certain of the B vitamins must be supplied in the ration, presumably because in the young animal the rumen has not reached functional capacity.—*Nutr. Rev.*, October, 1951.

Nutritional deficiency in one form or another among farm-raised sheep is widespread. Those deficiencies which are the most widespread and of the most economic significance are usually not manifest as disease entities with clinical symptoms, but are evidenced by a thin-fleshed condition, lack of thrift, and decrease in the production of meat and wool.—D. S. Bell, Ph.D., Wooster, Ohio.

One of the functions of the liver would appear to be the regulation of the level of serum iron.—*Nutr. Rev.*, October, 1951.

The minimum requirement for riboflavin of the newborn calf is between 35 and 45 µg. per kilogram of body weight daily.—*Nutr. Rev.*, October, 1951.

Colostrum must be available for the calf, either from the dam or some other source. Colostrum can be frozen and preserved for several months or until it is needed.—H. E. Amstutz, D.V.M., The Ohio State University.

There are important relationships of nutrition to pathology and age which exist in the feeding of dogs suffering from either glomerular or chronic interstitial nephritis, diabetes mellitus, enteritis, obesity, and dermatitis.—Mark L. Morris, D.V.M., Topeka, Kan.

Since iron is essentially a "one-way substance" with little excretion, its introduction parenterally results in an absolute increase in storage iron proportionate to the amount of iron given, minus the amount which was used for blood production.—*Nutr. Rev.*, October, 1951.

Sheep, by nature's design, but not too often by farmer practice, are high-gearred machines with high protein and mineral requirements. To realize the need for these nutrients, one need only be reminded that sheep, through the reproductive process, develop and deliver a fetus or fetuses equal to 8 and perhaps as much as 20 per cent of their own body weight, depending on whether they year single lambs, twins, or triplets.—D. S. Bell, Ph.D., Wooster, Ohio.

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# EDITORIAL

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## Five Thousand Nonmembers Are Too Many

Our compliments to AVMA President Wells for making his special objective for the year the enrollment of as many new members as possible from the present group of nonmember, but eligible, veterinarians. Some previous presidents have urged them to join the Association; a few have even chastised them, so to speak, for not doing so, but no concerted effort along this line has been made for over a decade. So, Dr. Wells' undertaking to enroll these nonmembers through his "grass roots" campaign is timely and, we hope, will be highly effective. With the cooperation of the AVMA resident secretaries who are already at work, *plus the active interest and help of members generally* for which he has appealed in his "President's Letters" in the November and December JOURNALS, we believe, with him, that significant results will be obtained.

Association membership now stands at an all-time high of over 11,000. *But there are still about 5,000 eligible veterinarians in the United States and Canada who do not belong.* For a numerically small profession, that is far too many potential members whose active support of the national association is now lacking but which, if gained, would give a tremendous boost to its program. In these organization-conscious times, that is of vital importance.

Why is it so important? First, because any organization's strength, political as well as financial, is measured by its total membership and by the percentage of "eligibles" who are members. On the political side, for example, when an AVMA representative appears before a congressional committee, he customarily introduces his testimony with a statement to the effect that the Association comprises some 11,000 members and that he speaks for two-thirds of all veterinarians in the United States. It would make a much stronger impression if the profession's spokesman on such occasions could say that he speaks for all veterinarians in the country.

Second, the increased financial support which would come from the present nonmember group would enable the Association to expand its program and greatly improve its services to members. In spite of a marked increase in these activities and services in recent years, there are a num-

ber of worth-while activities, some of them badly needed, which are necessarily deferred for lack of funds to inaugurate them. Some examples are: an AVMA-produced motion picture which would tell the story of the profession's work; adequate representation in Washington to follow legislative matters and maintain contacts with government agencies; additional funds for important committee projects.

AVMA membership has increased in the past decade from some 6,100 in 1940 to over 11,200 as this is written. In that time, the total number of nonmember veterinarians has remained rather constant; this means that the membership growth has come mainly from the new graduates. Thus, during the years 1941 through 1951, there were 5,478 new members admitted directly from student chapters as compared with 2,467 from other sources, a ratio of more than 2:1. In 1951, over 90 per cent of all graduates applied for membership within thirty days of graduation. With well-organized student chapters in all approved schools of veterinary medicine, there is reason to believe that a comparable percentage of new graduates will continue to affiliate with the Association in years to come. But the total number of nonmembers will remain static, as it has done for several years, unless something is done to gain their active interest and support. This was recognized by President Wells when he announced his campaign, for, on the solution to the nonmember problem depends the answer as to whether or not the AVMA is to attain its maximum efficiency and make the maximum contribution to professional welfare and the public interest that is inherent in the Association's objectives.

With this lofty purpose in mind, we face the down-to-earth question of what can be done to attract the interest and support of those veterinarians who are not now AVMA members. Membership in the Association has both tangible and intangible values, several of which were well stated by President Wells in his letter to members in the December JOURNAL (adv. page 8). To these can be added a number of others which we believe every veterinarian believes in, or wants, whether or not he is a member:

1) *High Standards of Veterinary Medical Education as a Safeguard Against Unqualified, Poorly Trained Professional Personnel.*—Throughout its existence, the AVMA and its committees and councils on education have worked for and established progressively higher standards, with the result that American colleges of veterinary medicine now lead the world in the quality of their product, i.e., graduates.

2) *High Standards of Professional Service.*—These are corollary to high standards of professional education but are immeasurably improved by the attention which a professional association constantly focuses upon new and better methods of practice.

3) *High Standards of Professional Conduct.*—Without these, a profession's honor and dignity suffer. Codes of ethics do not just happen but are evolved and fostered by all professional societies just as the AVMA evolved its Code and has given it fair and thorough application through its Committee on Ethics which works with similar committees of constituent associations on a program of education and local adjustment of ethical questions.

The foregoing are intangible factors which have no forceful appeal but they constitute the foundation on which a profession's work must be erected if it is to endure and prosper. To these can be added more tangible or practical benefits of membership in the American Veterinary Medical Association such as:

4) The authoritative findings which are reported annually by Association committees on important aspects of veterinary medicine including:

Therapeutic Agents	Diseases of Wild and Furbearing Animals
Biological Products	Diseases of Small Animals
Poultry Diseases	Animal Reproduction and A. I.
Parasitic Diseases	Hospitals for Large and Small Animals, and Others.
Nutrition	
Rabies	
Food and Milk Hygiene	
Diseases of Food-Producing Animals	

5) Even more tangible or concrete benefits of membership are the Association's publications which members receive on the following basis:

a) The monthly JOURNAL — the largest and most widely circulated veterinary periodical in the world — included as a part of the annual dues payment.

b) The "Proceedings Book" — an annual publication of 400-500 pages containing all of the papers, discussions, committee reports, and proceedings of the annual convention — included as a part of the annual dues.

c) The quarterly Research Journal — a scientific periodical of established reputation — available to members at a special price.

d) The "AVMA Directory" — published every two years and which is truly a "Bible" for the veterinary profession — available to members at a special price.

6) Membership services such as the Film Library, from which members may borrow specially selected films and slides for service club talks; and other public relations aids.

7) Professional liability insurance on a group basis with low premium rates.

These are only a few of the varied activities of the Association which members not already aware of them can use in helping President Wells and the resident secretaries "sell" nonmembers on the values of joining the Association. The AVMA is a strong, healthily growing organization but it should be stronger, larger, and conducting a more comprehensive program to meet the increasingly complex needs of professional progress. Much of that potential strength and support is represented in the 30 per cent of eligible veterinarians who do not share their part of the national association's work and expense but who do share in its benefits to some extent. The campaign now under way depends upon personal contacts of members with their local associates and friends in the profession who are not members. That is what President Wells means by a "grass roots" operation—that every member should do his part.

### Dr. W. E. Cotton 1866-1951

Dr. William Edwin Cotton, noted veterinary scientist and investigator of animal diseases, died on Sept. 6, 1951, at



Dr. W. E. Cotton

his home in Bethesda, Md. He lacked only eleven days of being 85 years old; cause of death was cardiac tamponade due to myocardial rupture.



Dr. Cotton was born on Sept. 17, 1866, at Oskaloosa, Iowa, the son of George E. and Mary (Binns) Cotton. As a young man, he taught school for several years and then started an almost life-long career with the U.S. Bureau of Animal Industry, first as an assistant, later as expert assistant at the BAI experiment station of which he was assistant superintendent from 1910 to 1927. While employed by the Bureau, he started his studies in veterinary medicine at George Washington University, from which he received his D.V.M. degree in 1911. From 1928 to 1937, he was superintendent of the BAI experiment station at Bethesda; he made the over-all plans for the present Animal Disease Station, Beltsville Research Center, and planned and supervised the moving of the Station from Bethesda to Beltsville in 1934-1935.

Dr. Cotton retired from the Bureau in 1937 after forty-four years of service and then joined the faculty of the School of Veterinary Medicine, Alabama Polytechnic Institute, as professor of infectious diseases and consultant, a position he held until his retirement in 1948.

In his many years with the Bureau of Animal Industry, he saw the experiment station grow from a four-man organization to nearly its present size, and assisted with the first move, prior to 1910, from Benning, Md., to Bethesda, by driving some of the animals through the streets of Washington at night. His contributions to knowledge of animal disease were numerous and his writings appeared in USDA bulletins, scientific journals, and the farm press. Dr. Cotton was probably best known for his work on tuberculosis and brucellosis; with the assistance of distinguished associates, he discovered important facts about the transmission, modes of elimination, and latency of tuberculosis infection in the animal body, and made observations on the viability of the tubercle bacillus under various conditions, especially in dairy products; he also did some work on the relationship between animal and human tuberculosis.

His major researches in brucellosis included the demonstration that *Brucella* organisms are eliminated in the milk of infected cattle more or less continuously; that

*Brucella abortus* produces definite and characteristic lesions when injected into guinea pigs, making these experimental animals valuable for brucellosis research; that the after-birth and discharges of infected cows at apparently normal parturition may be infected; that cattle may become infected through the intact skin, and that conjunctival exposure is a satisfactory and rather certain method of infection with *Brucella* organisms.

In his later years, Dr. Cotton was closely identified with the research on *Br. abortus* vaccines; he showed that calves are quite resistant to that infection even though they may react temporarily to the agglutination test; also, that *Br. abortus* strains of low virulence, such as strain 19, are effective as vaccines and that calfhood vaccination is a promising method of conferring immunity.

Dr. Cotton also did considerable work on vesicular stomatitis, including the isolation of various strains of the virus, particularly with relation to the differential diagnosis of foot-and-mouth disease.

In his lifetime, he was an active member and took a prominent part in the work of professional and scientific organizations. He joined the AVMA in 1911, the same year he received his veterinary degree, and served as first vice-president in 1933-1934, in addition to various committee assignments. He was also a member of the U. S. Livestock Sanitary Association; a charter member and former president of the Conference of Research Workers in Animal Diseases; member of the International Veterinary Congress in 1930 and 1934 (official U.S. delegate and reporter on brucellosis); and fellow of the American Association for the Advancement of Science. In 1946, Dr. Cotton received the Borden Award and Medal for outstanding research contributing to dairy cattle disease control, especially his work on strain 19 vaccine and on bovine tuberculosis.

His kindly and patient nature and his modest, sincere, and forthright attitude on scientific questions won him the respect and admiration of all who knew and worked with him.

He is survived by three children, a daughter Cornelia M., and two sons Edwin R., and John C. Cotton.



# CURRENT LITERATURE

## ABSTRACTS

### Animal Diseases in East Africa

It is of interest and some importance to note that most of the animal diseases listed as of greatest importance in East Africa do not exist in the United States. Some of the most important diseases have been eradicated when they have appeared in this country in the past. Others have never been found in North America. This list in the report of the Department of Veterinary Science, Tanganyika, East Africa, includes the following in the order given: rinderpest, bovine contagious pleuropneumonia, the tick-borne diseases, trypanosomiasis and tsetse fly, anthrax, black-water, rabies, foot-and-mouth disease, and tuberculosis.—[*Annual Report of the Department of Veterinary Science and Animal Husbandry, Tanganyika, East Africa, 1949.*]

### Intravenous Use of Formalin as a Hemostatic in Dogs

A study on the influence of formalin as a hemostatic agent in 20 native dogs is presented.

The blood coagulation time which ranged from 100.5 seconds (1 min., 40.5 sec.) to 195 seconds (3 min., 15 sec.), with an average of 2 minutes and 29.2 seconds, before the injection of the formalin solution dropped abruptly to less than 1 minute, ranging from 10.0 to 38.5 seconds with an average of 23.5 seconds, 15 minutes after the injection. Thereafter, the coagulation time increased continuously in three to four hours to the pretreatment level.

The data obtained in this work point to formalin as an effective hemostatic agent.

As used in this study, formalin was found to produce no permanent ill after-effects.—[*Arcadio C. Gonzaga and Adriano R. Gabuten: A Study of the Intravenous Use of Formalin as A Hemostatic in Dogs. Indian Vet. J., 27, (1951): 411-416.*]

### Depression of Fecal Urobilinogen by Aureomycin and Terramycin

Modification of the intestinal flora by drugs and the resultant effects on the nutrition and metabolism of the host have received extensive study in experimental animals. It has been observed that the administration of certain antimicrobial agents causes a decided alteration in the bacterial pattern of the intestinal contents.

It has been reported that the administration of aureomycin results in a marked reduction of urobilinogen in the feces of man, and that this change

takes place concurrently with a reduction in the number of coliform bacteria in the feces. It is the purpose of the present report to describe similar observations made in this laboratory on the fecal urobilinogen concentration of subjects who received aureomycin and terramycin.

The oral administration of aureomycin or terramycin to man results in an extremely low concentration of fecal urobilinogen; a change which occurs during the first forty-eight to seventy-two hours of drug therapy, concurrently with other modifications in the character of the intestinal contents. Normal concentrations of urobilinogen may not be restored for so long as six or seven days following the discontinuance of drug administration. The depression of urobilinogen formation is probably the result of alterations in the flora of the intestine, which have not yet been completely defined. A case of hemolytic anemia is reported in which strikingly low fecal and urinary urobilinogen concentrations were observed while the patient was receiving aureomycin.—[*William C. Robbins: Depression of Fecal Urobilinogen by Aureomycin and by Terramycin. Proc. Soc. Exptl. Biol. and Med., 77, (1951): 158-162.*]

### The Trichomonad Flagellate of the Reproductive Organs of Cattle

Studies of *Trichomonas fetus* were made from living material, observed especially by dark-field illumination, and from preparations, especially those made by silver impregnation technique. The observations add to previous knowledge of the flagellate certain details about the origin, grouping, and activity of the anterior flagella; the position, form, and relationship to the nucleus of the parabasal body; and the morphology and activity of the undulating membrane and the free posterior flagellum. The parabasal body appears solid in some silver preparations and has the form of an elongated ring in others. As in many other trichomonads, the posterior flagellum is an acroneme type of flagellum.

Some of the flagellates in culture show the results of morphogenetic abnormalities, having one or two extra anterior flagella, enlarged and misshapen nuclei, duplicated axostyles, and arrested cytoplasmic division. In a greater number of others, the normal course of events in division may be studied. The outgrowth of new anterior flagella, giving two sets of three, is completed before cytosomal division. The two mastigonts, at first parallel and both directed anteriorly, come

to lie in opposite directions and draw apart. Tais is essentially longitudinal division, although the body is not furrowed longitudinally as in the typical form of that division.—[Harold Kirby: *Observations on the Trichomonad Flagellate of the Reproductive Organs of Cattle*. *J. Parasitol.*, 37, (1951): 445-458.]

#### Leptospira Icterohaemorrhagiae Infection in Pigs

Infection in pigs with organisms of the genus *Leptospira* has not previously been recorded in Great Britain. This paper describes the investigations made in two cases of jaundice in young pigs.

Two cases of leptospiral jaundice in young pigs are recorded.

The isolation of *Leptospira icterohaemorrhagiae* by guinea pig inoculation from both pigs, and its subsequent culture in one case, are described.

The virulence of *L. icterohaemorrhagiae* for the guinea pig is discussed, and some difficulties encountered in obtaining and maintaining a growth of the organism *in vitro* are mentioned.—[D. I. Nisbet: *Leptospira Icterohaemorrhagiae Infection in Pigs*. *J. Comp. Path. and Therap.*, 61, (1951): 155-160.]

#### Experimental Leptospirosis of Calves

1) Six calves were inoculated with *Leptospira* organisms obtained from natural cases of bovine leptospirosis, and cultural, hematological, and clinical studies were made on these animals. The following features of the disease were found:

a) A fever started as early as the fourth and as late as the ninth day and lasted two to four days.

b) Leptospiemia was detectable in some cases before the febrile period and ended in all cases soon after the end of fever. In 1 calf that died, leptospiemia continued into the moribund state of the animal.

c) In 2 cases, leptospiuria occurred after the fever, in one as long as six weeks, and *Leptospira* were isolated from the kidneys of both animals at autopsy. Albuminuria was observed in conjunction with leptospiuria.

d) Neutropenia and lymphopenia occurred during or close to the time of fever.

e) A hemolytic anemia occurred in all cases except the short-termed fatal cases. In 3 cases, hemoglobinuria occurred in association with erythrocyte decrease. Associated with the progress of anemia in 2 cases was a great increase in red cell fragility. All animals showing r.h.c. decrease had great numbers of immature erythrocytes preceding and during remission of the anemia.

f) In all cases, there were gross and microscopic lesions of focal interstitial nephritis. In 1 calf that died in the acute stage of the disease, focal necrosis was found in the liver.

2) The significance of these findings is discussed in relation to the fundamental nature of the disease and the observable physical signs.—[Karl R. Reinhard: *A Clinical Pathological Study of Experimental Leptospirosis of Calves*. *Am. J. Vet. Res.*, 12, (Oct., 1951): 282-291.]

#### Serum Proteins of Normal and Diethylstilbestrol-Treated Cockerels

Variations in the calcium, phosphorus, and total protein of chicken and pigeon serums during the normal reproductive cycle have been repeatedly reported.

In the preliminary investigation, diethylstilbestrol pellets were implanted in both male and female chicks 8 to 10 weeks of age. The action of the estrogen was fairly rapid, and noticeable in one week.

For the electrophoretic analyses of the serum proteins of normal and diethylstilbestrol-treated birds, two groups of 8-week-old cockerels were employed. Diethylstilbestrol pellets were implanted in the necks of 5 birds. The other birds were used as controls. One week after the implantation, the birds were killed, and the serum prepared from the blood was subjected to electrophoretic analysis.

These results demonstrate that the injection of diethylstilbestrol will cause changes associated with egg formation to occur in the serum proteins of male birds. Also, it can be concluded that the increase in the serum proteins, which binds the increased calcium in the laying hens so that the total diffusible calcium remains constant, may be caused by the female sex hormone. The properties of the protein fractions found in the serums of normal and estrogen-treated male birds are under investigation.—[R. E. Clegg, P. E. Sanford, R. E. Hein, A. C. Andrews, J. S. Hughes, and C. D. Mueller: *Electrophoretic Comparison of the Serum Proteins of Normal and Diethylstilbestrol-treated Cockerels*. *Science*, 114, (1951): 437-438.]

#### Pasteurella Multocida Chicken Embryo Vaccine

Mice immunized with chicken embryo vaccines prepared from types A, B, and C of *Pasteurella multocida* demonstrated a strong resistance to homologous challenges, but displayed only a low degree of immunity to heterologous challenges. It is stated that type specificity is due to the presence of a soluble antigen, demonstrable by a precipitin test and a capsular swelling technique, and associated with the capsule. It is concluded that strains for the preparation of bacterins and anti-serums should be selected on a serological or immunological basis rather than on zoological grounds. A number of suggestions, based on the antigenic and immunological behavior of this organism, are put forward in regard to the preparation of immunizing agents.—[G. R. Carter:

*Studies on a Pasteurella Multocida Chicken Embryo Vaccine. II. Type-Specific Nature of Immunity Elicited by a Monovalent Pasteurella Multocida Vaccine.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 326-328.]

#### Experimental Brucellosis in Dogs

Fourteen young dogs were fed, *ad libitum*, milk containing *Brucella abortus*, USDA strain 2308 from infected cows for periods up to and including 112 days. Serum agglutinins were not demonstrable during the course of the investigation. *Brucella* were not isolated from the dogs' feces or from their tissues at autopsy.—[Erskine V. Morse, Homer G. Erling, and B. A. Beach: *The Bacteriologic Aspects of Experimental Brucellosis in Dogs Following Oral Exposure. II. Effects of Feeding Brucella-Infected Milk to Young Dogs.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 324-325.]

#### Newcastle Disease Infection

Chickens were found to be susceptible to infection of the respiratory tract by the GB strain of Newcastle disease virus at periods of three to four weeks after single doses of a killed virus Newcastle disease vaccine intramuscularly and at two weeks after four consecutive doses at weekly intervals. Although a high percentage of vaccinated birds were refractory to fatal infection, every chicken exposed by intranasal inoculation, direct contact exposure, or air-borne contact exposure acquired infection of the respiratory tract.—[E. R. Doll, M. Elizabeth Wallace, and William H. McCollum: *Susceptibility to Newcastle Disease Infection of Chickens Vaccinated with a Killed Virus Vaccine.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 368-371.]

#### Sensitivity of Skin Areas of Cattle to Intradermal Tests

Differences, previously reported but not evaluated, in the relative sensitivities of different skin areas of cattle to the intradermal test have been evaluated from data obtained by injecting seven groups of 10 cattle each with four acid-fast allergens at four levels per allergen into each of four skin areas of each animal—back, upper side, lower side, and neck (a total of 160 injections per type of area per group). Two groups of animals had been previously sensitized by intraperitoneal injections with heat-killed *Mycobacterium tuberculosis* var. *boris*; 2 with *M. paratuberculosis*; 1 with *M. tuberculosis* var. *avium*; 1 with *M. tuberculosis* var. *hominis* and 1 with *Mycobacterium phlei*. The average increases in skin thickness resulting from the corresponding levels of the allergens were compared for each type of area by biometric methods which allowed the estimation of the relative sensitivities of the areas. Assuming a sensitivity of unity for the back area, the relative sensitivity for the upper side was estimated to be  $1\frac{1}{4}$ ; for the lower side,  $2\frac{1}{2}$ ; for the neck,  $2\frac{1}{4}$  to

3.—[L. A. Baisden, Aubrey Larsen, and T. H. Vardaman: *Relative Sensitivity of Different Skin Areas of Cattle to Intradermal Tests.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 273-275.]

#### Pathogenicity of *Brucella Abortus* for Swine

In four different trials, 22 *Brucella*-free swine were exposed to *Brucella abortus* infected cow's milk. *Brucella suis* was recovered from 4 pigs in two different trials and *Br. abortus* was recovered from 1 hog in one trial. The results raise the questions of whether it is possible for the cultural characteristics of *Br. abortus* to be altered to those of *Br. suis* by living and multiplying in swine tissues, and if present techniques are sufficiently precise to justify current species designations, providing, of course, the pigs were not exposed accidentally to *Br. suis*.—[F. V. Washko, W. W. Bay, C. R. Donham, and L. M. Hutchings: *Studies on the Pathogenicity of *Brucella Abortus* for Swine.* *I. Am. J. Vet. Res.*, 12, (Oct., 1951): 320-323.]

#### Sulfaquinoxaline in Avian Coccidiosis

Sulfaquinoxaline administered to chickens in a mash as a prophylactic agent against an impending infection with coccidiosis indicated that the drug was effective in alleviating clinical manifestations in chickens infected with mild cecal, and some forms of intestinal, coccidiosis. The effective dosage for alleviating symptoms of cecal coccidiosis by the continuous method of treatment appeared to be greater than the amount which has been reported as effective in decreasing the mortality from more severe forms of the disease. The disease in the trials was not sufficiently serious to warrant treatment by preventative methods which are widely recommended at the present time.—[R. A. Bankowski: *Use of Sulfaquinoxaline as a Preventative Against Mild Outbreaks of Coccidiosis of Chickens under Field Conditions.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 349-354.]

#### Streptomycin Causing Retrobulbar Optic Neuritis

A case is reported in which blurriness occurred in both eyes on the ninth day of treatment with streptomycin (0.37 Gm. every 3 hours); her pupils were semidilated and reacted sluggishly, the corrected visual acuity was 20/70, O.U., and there were central scotomas in the visual fields. The patient was given thiamine chloride (20 mg. 3 times daily). Two and a half weeks after streptomycin was discontinued, corrected visual acuity was 20/30 and the subjective blurring had disappeared completely. At examination, about six months after discontinuance of streptomycin therapy, the corrected vision was 20/20 and there were no central scotomas in the visual fields.—[Peter Sykouski: *Streptomycin Causing Retrobulbar Optic Neuritis.* *Am. J. Ophthalmol.*, 34, (1951): 1446.]

### Electrolytes in Body Fluids of Dairy Cattle

Diethylstilbestrol (75-100 mg.) was administered intramuscularly over a two-day period to non-lactating dairy cattle in the last two to four days of pregnancy. These animals were then studied over the parturition period. The most noticeable changes were a fall in total blood serum calcium and serum inorganic phosphate at the time of parturition. In some individuals, a slight fall in total serum calcium was noted following estrogen administration. No appreciable or consistent changes were noted in blood levels of sodium, potassium, magnesium, or chloride following either estrogen administration or parturition.—[A. F. Sellers and M. H. Roepke: *Studies of Electrolytes in Body Fluids of Dairy Cattle. II. Effects of Estrogen on Electrolyte Levels in Body Fluids in Late Pregnancy.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 292-295.]

### Cervical Mucosa of the Cow During the Estrous Cycle

The cyclical cellular changes of the cervical mucosa of the cow was studied histologically from biopsies taken from several cows during their estrous cycles. These specimens revealed that mucus is constantly secreted by all of the simple columnar epithelial cells, with their maximum fullness occurring at estrus. At each estrus some cells degenerate, but the majority of them retain their nuclei and the cytoplasm (mucus) is replenished in preparation for the next cycle. No mitosis was observed.—[John B. Herrick: *The Cytological Changes in the Cervical Mucosa of the Cow (Bos Taurus) Throughout the Estrous Cycle.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 276-281.]

### Effect of Cortisone on Normal Sheep

When a single dose of 200 mg. of cortisone acetate was injected into 1 ewe, a hyperglycemia resulted after three and one-half hours and persisted for twenty-four hours. There was no change in the plasma electrolytes. There was no significant increase in the total numbers of circulating leukocytes, but there was an increase in the percentage of neutrophils and a decrease in the percentage of lymphocytes. A transitory eosinopenia was observed. When cortisone was administered to 4 sheep for seven consecutive days, the glycemic response was more sustained in 3 of the animals. One ewe did not respond. A transient increase was noted in the plasma potassium and chloride; this was followed by a decrease in concentration to below preinjection levels before the return to the normal range. No change was observed in sodium concentration. There was an increase in the numbers of total circulating leukocytes, an increase in the percentage of neutrophils and a decrease in the percentage of lymphocytes. A postinjection eosinophilia persisted for four days.

There was considerable variation in the degree and the time of maximal metabolic response among the 4 ewes.—[Louis W. Holm, Jack Howarth, and Joanne Kelleher: *The Effect of Cortisone on Normal Sheep.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 314-319.]

### Causative Agent of Infectious Sinusitis of the Turkey

The causative organism of infectious sinusitis of the turkey was isolated from infective exudate of affected turkeys and grown in embryonating chicken eggs. The gross pathology shown by the embryos was noted.

Studies were conducted on various routes of inoculation. Concentrations of the agent in several portions of the embryo were determined. Viability of the agent in storage at various temperatures was determined.

The yolk sac and yolk were high in concentration of the organism and the yolk sac route of inoculation was most satisfactory.—[Harvey H. Hoyt, B. S. Pomeroy, and M. H. Roepke: *The Propagation of the Causative Agent of Infectious Sinusitis of the Turkey in the Chicken Embryo.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 329-333.]

### Experimental Hyperkeratosis

The experimental design was planned to test factors of suspected feedstuff, contact, and environment in relation to bovine hyperkeratosis during an outbreak of the disease. Forty-five new test calves, in addition to calves already affected with bovine hyperkeratosis, were used. Bovine hyperkeratosis was developed in new test calves fed the suspected feedstuff. More feed and a longer time was necessary to produce the disease in the older test calves. Environment was eliminated as a factor. Contact with sick calves, plus feed, did not enhance the severity of the experimentally produced disease.—[C. Olson and R. H. Cook: *Attempts to Produce Bovine Hyperkeratosis.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 261-272.]

### Botulism in the Mouse, Mink, and Ferret

The authors have studied the susceptibility of the mouse, ferret, and mink to purified *parabotulinum* toxin types A and B by the intraperitoneal and oral routes. The mink were found to be relatively much more resistant to type A than B toxin by way of the oral route, while the mouse and ferret were both equally susceptible to the two types of toxin *per os*.

Tissues from poisoned animals were subjected to macroscopic and microscopic studies and microscopic alterations in spleen and lymph nodes are described.—[T. Moll and C. A. Brandly: *Botulism in the Mouse, Mink, and Ferret with Special Reference to Susceptibility and Pathological Alterations.* *Am. J. Vet. Res.*, 12, (Oct., 1951): 355-363.]

## FOREIGN ABSTRACTS

### Distemper Research

The author surveys the present knowledge of distemper and distemper-like conditions. He classifies "distemper encephalitis" under the following headings:

- 1) Typical distemper transmissible to ferrets.
  - a) Classical distemper caused by virus of Carré. After the catarrhal stage, nervous symptoms appear—chorea, spasms, and paralysis. The brain shows cell destruction only, without inflammatory changes or demyelination; mortality is high. Distemper antiserum given early in the disease may prevent development of nervous symptoms. Distemperoid vaccine may be useful.
  - b) Paradistemper or hard pad disease. Encephalitis develops with inflammatory changes and demyelination. Serum is effective.
- 2) Typical distemper not transmissible to ferrets. Histological changes are the same as in hard pad disease.
- 3) Toxic encephalitis. Not contagious; inflammatory changes only; no demyelination.
- 4) Toxoplasmosis encephalitis; affects man and mice, too.
- 5) Rubarth's disease—encephalitis and hepatitis. Cardinal symptoms are swelling of the lymphatic glands, sunken eyes, thirst, diarrhea, anemia, and edema of the legs. Spasms appear early and subside within a week; mortality only 20 per cent.
- 6) Hysteria due to feeding with white bread made from agenzized flour.—[F. G. Sulman, M.D., D.V.M.: *The Present State of Distemper Research. Refuah Vet.*, 8, 1951.]

### Ophthalmic Observations

The author's observations on 310 eye patients for 1949 and 1950 include the following conditions: entropion, luxation of the crystalline lens; extraction of the lens by luxation; traumatic exophthalmus; protrusion of the nictitating glands; dermoid proliferation of the cornea; congenital aplasia of the lower eyelid in cats; papillomatous tissue proliferation of the palpebral margins; persistent papillar membrane; hemorrhagic infiltration of the cornea; chronic mucopurulent conjunctivitis obstructing the tear duct; impaired function of the lacrimal papillae; purulent dacryocystitis in rabbits; suspected retinitis pigmentosa in dogs; congenital strabismus in a cat; myopia in a dog; facial paralysis in a cat; gunshot wound causing perforation of the eyeball; postoperative ectropion involving upper eyelid; a large perforating wound with prolapse of the iris; and paralysis of the right sympathetic nerve and the right plexus brachialis. The article contains a number of good

illustrations.—[H. Veenendaal: *Observations by the Ophthalmic Division of a Clinic for Small Domestic Animals. Tijdschr. voor Diergeneesk.*, 76, (1951): 609-640.]—L.V.E.

## BOOKS AND REPORTS

### Clinical and Biological Sciences

The authors have attempted to present an introduction to statistical thought and method which is more concerned with providing a grasp of the fundamental concepts and philosophies than with developing a broad working knowledge of statistical methods. This approach is exemplified by the following quotation from the chapter on the design of experiments:

When one has thought and worried over such matters (significant differences) for a period, it becomes increasingly clear that the only certainty is the probability itself. To be comfortable in that view is necessary for those engaged in research. It is impossible to prove anything. One can only calculate a probability. Without statistical concepts and methods, probability can only be guessed at—usually by rather obscure, subconscious mechanisms. With the aid of the basic science of statistics, however, probability can be calculated exactly.

The book is short, only 89 pages in the text proper, plus 20 pages in an appendix which contains formulas and certain of the commonly used statistical tables.

Much of the text is devoted to probability and the normal distribution. Those familiar with the field may criticize the book for incompleteness, since little space is devoted to binomial and Poisson distributions and no mention is made of certain other methods such as Fisher's maximum likelihood.

This book can be recommended for the students, the practitioners, or those in research who desire an understanding of statistical methods which will aid them in interpreting scientific reports or in actually using some of the simple statistical methods in their own work.—[*Statistics for Medical Students*. By Frederick J. Moore, Frank B. Cramer, and Robert G. Knoules. 113 pages. The Blakiston Company, New York, N. Y. 1951. Price \$3.25.]—L. C. FERGUSON.

### Veterinary Guide for Farmers

This book has been compiled, "to serve as a handbook for the livestock owner and as a textbook in schools of agriculture." It is easily read, well-illustrated, and contains features that are commendable.

The author correctly states, that, "The first step in the treatment of animals should be proper diagnosis." However, in his discussion on "How to Diagnose," insignificant reference is made as to the value of obtaining veterinary or laboratory assistance.



For the treatment of foot rot in cattle, the statement is made that, "Some veterinarians have obtained excellent results by injecting 500 cc. of distilled water containing 60 Gm. of sodium sulfapyridine and 120 Gm. of sodium sulfathiazol."

Because of omissions, inaccuracies, and disused treatments presented, this reviewer would not feel justified in recommending this book to his clients.

No doubt the author has expended considerable time in assembling his material and illustrations. If the book was properly revised and edited it could serve as a safe and useful guide for farmers. —[*Veterinary Guide for Farmers*; By G. W. Stamm. Edited by Dallas S. Burch. Cloth. 384 pages. 2nd ed. Windsor Press, Chicago. 1951. Price \$3.50.]—G. W. JENSEN.

### Inhalation Anesthesia

This small book, written by a leading authority on anesthesia in human surgery, gives a condensed account of the theory, principles, and practice of inhalation anesthesia. It would be of interest to a small animal practitioner, especially that part that deals with accidents and sudden deaths during anesthesia. The classification and description of the various stages of anesthesia are excellent, and would be of value to any veterinarian who wishes to go beyond the bare mechanics of anesthesia. There is no padding in the book, and its style is brief to the point of terseness, which is much in its favor. —[*Inhalation Anesthesia*; By Arthur E. Guedel, M.D. Cloth. 143 pages. 2nd ed. The Macmillan Co., New York. 1951. Price \$3.75.] —GEORGE R. FOWLER.

### International Pharmacopoeia

The first volume of the first International Pharmacopoeia, setting uniform standards for important drugs, was published on Oct. 30, 1951, by the World Health Organization in Geneva. Prepared, on the recommendation of 79 member states, by the World Health Assembly, it contains descriptions of 200 important drugs defined by chemical, physical, and biological tests and is expected to bring uniformity in standards for drugs utilized throughout the world.

The first volume also contains 43 appendices containing instructions for establishing purity and strength of drugs. The names of drugs are given in Latin, the traditional language of medicine and pharmacy. Their adoption will prevent confusion arising from the use of different names for the same drug.

The second volume of the pharmacopoeia is now under preparation. It will deal with such drugs as penicillin, streptomycin, and other antibiotics, and will contain specifications for the administration of drugs by injection and in tablet form.

The first volume is now available in English and French. A Spanish edition will be published in the near future. —[*International Pharmacopoeia*:

By World Health Organization, 1501 New Hampshire Ave., N.W., Washington 6, D.C. 1951. Price not given.]

### Diseases of Poultry

This book from the Australian Agricultural and Livestock Series was first published in 1939 as a nontechnical treatise on poultry diseases causing the most economic losses. Since that time, it has become a standard reference book for courses at the universities of Sidney and Queensland and for veterinarians and livestock inspectors in general. For this reason, the present edition has been enlarged to contain details of technical and local importance.

Aside from general chapters on postmortem technique, feeding and management, hatchery problems, and disinfection, an attempt is made to group the diseases according to common symptoms which results in some unpalatable headings like "roup diseases" comprising respiratory tract affections, and "diarrhea." The chapter on "various diseases" includes such heterogeneous conditions as blue comb, tuberculosis, mycoses, and coccoses. The ordinary etiologic classification is followed with respect to deficiency diseases, poisonings, and parasitic diseases, while separate chapters are devoted to the diseases of turkeys and ducks.

The book reflects the familiarity of the author with recent advances in avian pathology and their practical application. It is a useful source of information on the poultry diseases of economic importance in Australia. The arrangement of the subject matter, the lack of references, and the use of some unfamiliar common terms would make for difficulty in wide adaptation of this text by both the profession and the laity of this country. —[*Diseases of Poultry*; By T. G. Hungerford. 2nd ed. 427 pages. 87 figures. Angus and Robertson, Sidney and London; Perkins, 1603 Hope St., South Pasadena, Calif. 1951. Price \$10.00.] —ERWIN JUNGHER.

### Annual Review of Microbiology

This book is the fifth volume in this excellent series of annual yearbooks which review the literature in the field of microbiology.

There are 19 separate articles which deal with various phases of microbiology. A review of this type is hardly suited for the practicing veterinarian but will be exceedingly useful for the busy research worker in various fields of bacteriology and the investigation of animal diseases.

The book is carefully cross-indexed both as to subject titles and authors. The citations to the literature which the several articles review appear to be comprehensive indeed. For example, there are 218 titles in the bibliography of the article on the metabolism of bacteria. The individual writers appear to have done a thorough job of reviewing



the literature for their respective subjects. The topics range through a wide field from the morphology and cytology of bacteria to the microbiological deterioration of manufactured materials. This particular volume appears to deal rather more specifically with the physiology and metabolism of microorganisms rather than infectious diseases.—[*Annual Review of Microbiology*: Ed. by Charles E. Clifton (editor) and Sidney Raffel and H. Albert Barker (associate editors). Cloth. 679 pages. 1951. Price \$6.00.]—L. M. RODE-RICK.

### Surgical Care

This book is a guide in the field of surgical care embracing the study of all the phenomena and the development of procedures both before and after operation or trauma. In fact, it covers everything except the actual surgical technique of operations. Physiological principles have been emphasized in order to justify surgical procedures. It is practical and presented in an interesting manner. Although this book was written for the human surgeon, it contains a great deal of material that should be of interest to the veterinarian.

It has 19 chapters, most of which pertain to human medicine and contain little of practical interest that could be applied to veterinary surgery. However, the chapters on "Systemic Reaction to Surgery," "Nutrition in Surgery," "Basic Preoperative Care," "Chemotherapy in Surgery," "Surgical Shock," and "Wound Complications" contain much information that is of vital interest to the veterinary surgeon.—[*Surgical Care*: By Robert Elman, M.D., F.A.C.S. Cloth. 586 pages. illustrated. Appleton-Century-Crofts, Inc., New York. 1951. Price \$8.00.]—A. A. LENERT.

### Biological Antagonism

Biological antagonism is a new science, bringing within its scope elements of biochemistry, pharmacology, chemotherapy, immunology, and other scientific fields. It is based upon a functional concept which is fundamental to every biological science. Life exists because of biological antagonisms. This is an extremely broad statement but reflects no more than the fact that biological systems are orderly and that orderliness could not be except for antagonisms.

In his preface, the author states, "The purpose motivating the preparation of this summary of knowledge in the field of displacement is a belief that in no single instance of specific displacement has a thorough job been done, and that such work, properly undertaken, will lead to discoveries of chemotherapeutic agents of great value in medical science."

This book presents a thorough, complete, yet concise study of the theory of biological relativity—that "general law" which underlies all biologi-

cal activity and is fundamental to the resolution of all problems in biology.

Dr. Martin reviews biological antagonism as reflected in natural and synthetic displacing agents, covers antagonism as seen in the fields of amino acids, purines, pyrimidines, vitamins, hormones, minerals, and as it forms the basis of immunology, pharmacology, and chemotherapy. Finally, he offers the concept of biological relativity based upon his extensive study of these biological antagonisms.—[*Biological Antagonism*: By Gustav J. Martin. Cloth. 516 pages. The Blakiston Co., Philadelphia. 1951. Price \$8.50.]

## REVIEWS OF VETERINARY MEDICAL FILMS

*Sterility in Dairy Cattle*.—Sound, 16-mm., black and white; running time twenty minutes. Produced by Imperial Chemical Industries Ltd., London, under the supervision of Dr. W. R. Woolbridge, M.R.C.V.S., Dr. N. S. Barron, M.R.C.V.S., and C. W. Ottaway, F.R.C.V.S., of the Veterinary Educational Trust; directed by Frank Cadman, edited by Enid Mansell; photography by Morton Lewis; and diagrams by G. B. Animation. This film can be obtained on loan from Imperial Chemical Industries (New York) Ltd., 521 Fifth Ave., New York 17, N.Y., on a specified date for a service charge of \$2.50.

In this film we are introduced to a farmer whose herd is rapidly deteriorating because of widespread and increasing sterility. He consults his veterinary practitioner and by means of animated diagrams is shown the normal course of conception and pregnancy, the relation of the reproductive organs, the fetus, the process involved in birth, culminating with excellent live pictures of the birth of a calf until it stands up to suckle. But as sterility may not always be due to a defect or disease in cows, testing of the bulls and collection of semen with an artificial vagina is shown, thus demonstrating the difference between healthy and defective bulls.

Other tests on the herd follow, which include excellent pictures of rectal examinations, expulsion of corpora lutea, examination of vaginas with speculum, and examination of the cows' records. Causes of sterility such as salpingitis and metritis are discussed. Advice is given on how to avoid contagious abortion, tuberculosis, and other diseases, and what steps should be taken to bring the herd back to normal health. Pictures of the calf (schematic) as it develops month by month are shown. The film concludes with a diagram which shows graphically the tremendous job the cow undertakes. Not only does she provide a calf every year, but also many times her own weight in milk. The film should be of interest to veterinarians and students of veterinary medicine, but is intended for owners of dairy herds to show them the complicated problem of infertility and what a veterinarian can do about it.

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# THE NEWS

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## Eighty-Ninth Annual Meeting Atlantic City—June 23-26, 1952

### **Local Committee Prepares for 2,500 at AVMA Convention**

Following a conference with Executive Secretary Hardenbergh and Assistant Executive Secretary Van Houweling at Atlantic City early in December, the Committee on Local Arrangements for the AVMA eighty-ninth annual meeting has set up large-scale plans for welcoming, housing, and entertaining an expected 2,500 registrants. Under direction of General Chairman J. R. Porteus, the Committee is planning to give the big AVMA delegation unrivaled entertainment in the best East Coast tradition.

The Boardwalk convention site, naturally cooled by the ocean, insures early summer com-

fort for scientific sessions and around-the-clock recreation, including bathing, golfing, and fishing. Local weather bureau records covering a sixty-seven year period show an average summer temperature of 72.7 degrees, the days being 6 to 10 degrees cooler than in nearby large cities.

The city's 8 miles of beautiful beaches boast one of the finest corps of lifeguards in the nation. The total force numbers over 100, all of whom are specially trained for the job.

Atlantic City is built on an island connected with the mainland by causeways. The famed

**Atlantic City's Boardwalk, as viewed from the Ambassador Hotel, AVMA convention headquarters. The Ambassador's sunporch is seen at the left.**



Boardwalk is more than 4 miles long and is lined with nearly 600 shops, hotels, and other business establishments.

#### POST-CONVENTION TOURS

Because many members will want to go on vacation trips up and down the eastern seaboard after taking in Atlantic City's attractions, an AVMA post-convention tour is being organized to cover places of special interest in that region. Arrangements also are being made for an optional trip to Bermuda. Details will be announced in the February JOURNAL, along with preliminary information about the scientific program.

#### MAKE HOTEL RESERVATIONS NOW

Although there will be ample hotel accommodations for everyone attending the convention, the best and wisest choice of rooms will go to those who make early reservations. The form on advertising page 41 of this issue should be used in requesting reservations.

#### Ralston Purina Research Fellowship Awards Program

The Research Fellowship Awards Program was started by the Ralston Purina Company with the 1949-1950 school year. The first recipients of these fellowships have finished their graduate work and are assuming positions of leadership in the research field.

The Ralston Purina Company is again offering these fellowship awards for the 1952-1953 school year as a means of helping to train leaders who are needed in the scientific fields. An outline of the program follows:

Awards will be made in the fields of (1) nutrition and physiology research as applied to dairy, poultry, and animal husbandry; and (2) research in transmissible diseases of livestock and poultry.

Any individual qualified for graduate study in any land-grant agricultural college or approved veterinary college (including Canadian colleges) who possesses desirable personal qualifications and submits a completed application may be eligible. The application and necessary requested information must be in the hands of the Awards Committee by March 1 of the year the award is to be made.

Research fellowships will be awarded on an annual basis. The recipient of an award may be eligible for appointment not to exceed a tenure of three years.

Not more than seven research fellowships shall be awarded annually, as follows: not more than two each in dairy husbandry, animal husbandry, and poultry husbandry; and not more than one in the field of veterinary science.

The selection of the recipients of the annual research fellowship awards, as well as the rules governing the awards, shall be made by

a committee of an officially appointed representative of each of the following organizations: Poultry Science Association, American Veterinary Medical Association, American Dairy Science Association, American Society of Animal Production, Association of Land-Grant Colleges, and the Ralston Purina Company.

Amount of Fellowship — \$1,560.00 annually.

Application blanks for these fellowship awards may be obtained by writing the Ralston Purina Research Awards Committee, c/o Mr. J. D. Sykes, Ralston Purina Company, St. Louis 2, Mo.

#### Women's Veterinary Medical Association

The fifth annual meeting of the Women's Veterinary Medical Association was held during the eighty-eighth annual meeting of the AVMA in Milwaukee, Aug. 20-23, 1951. At the business meeting, it was decided that, because of the scarcity and scatter of graduating women veterinary students, the \$50 prize proposed at the 1950 meeting be awarded to a woman veterinarian who has made a significant contribution to veterinary medicine during the year. A committee consisting of Drs. Lois Calhoun, Michigan State College; Margaret Sloss, Iowa State College; and Josephine Deubler, University of Pennsylvania, was appointed to work out the details of this award. Suggestions are welcomed by this committee.

It was proposed that the WVMA president send letters to the senior women veterinary students of the various colleges, inviting them to join the Association and to attend its meeting during the AVMA convention.

The next meeting will be a cocktail party to be held on the second day of the AVMA convention in June, 1952, in Atlantic City. The agenda will be published in the *Bulletin of the W.V.M.A.* so that members may come prepared for discussion.

#### STUDENT CHAPTER ACTIVITIES

**Iowa State Chapter.**—The program for the Iowa State College Student Chapter of the AVMA during the first semester of the current school year featured a fall banquet on October 9; a report from the delegate to the AVMA convention in Milwaukee on October 17; and guest speakers **Dr. J. Fortenberry** of Cutter Laboratories, on November 14; and **B. J. Gray** of Fort Dodge Laboratories, on November 29. *s/DeWAYNE V. O'CONNELL, Program Committee.*

#### WOMEN'S AUXILIARY

**Student Auxiliaries.**—One of the projects of the Women's Auxiliary to the AVMA is to sponsor auxiliaries to the student chapters of the AVMA. Prior to the annual meeting of

the auxiliary in 1948, Mrs. O. B. Curry, who held the office of second vice-president, contacted wives of students of veterinary medicine and organized five groups as junior affiliates. That number has increased to 16.

In 1950, Mrs. H. S. MacDonald edited a newsletter for this group. The purpose of this publication, which carries on exchange of ideas from the various groups and is issued once a month during the college term, is to foster and maintain interest among the junior auxiliaries and to bind them more closely to their state or provincial auxiliaries and to the Women's Auxiliary to the AVMA.

These organizations have stressed friendliness toward each other, working toward a common goal, and being good working partners to their husbands. They have planned programs with the full cooperation and approval of the college faculties. Several of their topics for study are: "Telephone Responsibilities of a Veterinarian's Wife"; "Keeping Books and Records"; "Handling Clients"; "Medical Terminology"; "Care of Surgical Instruments"; and "Legal Aspects of Veterinary Practice." These topics show the constructive nature of the thinking of these auxiliary members.

These young ladies do not neglect the social side of the organization. They sponsor parties, bridge classes, sewing classes, and hobby shows.

We are proud of the wives of our future veterinarians and feel a great deal of satisfaction in having these groups affiliated with the Women's Auxiliary to the AVMA.

s/(MRS. C. E.) HELEN BILD, *President*.

**Florida Auxiliary.**—The fourth annual meeting of the Women's Auxiliary to the Florida Veterinary Medical Association was held in the Floridan Hotel in Tampa on Oct. 29, 1951, with 43 members present at the business meeting. The guest speaker was Mrs. C. E. Bild, president of the Women's Auxiliary to the AVMA. Mrs. J. E. Scatterday reported on the Milwaukee meeting of the Auxiliary House of Representatives. A new project was added for the coming year—\$25 to be given to the AVMA Research Fund. Officers elected at this meeting are Mrs. R. P. Knowles, Miami, president; Mrs. R. F. Jackson, St. Augustine, vice-president; Mrs. C. P. Vickers, Tallahassee, secretary; and Mrs. C. F. Simpson, Gainesville, treasurer. s/(MRS. V. L.) FAYE BRUNS, *Retiring Secretary*.

**Kansas City Auxiliary.**—At the Nov. 20, 1951, meeting of the Women's Auxiliary to the Kansas City Veterinary Medical Association, Miss Jean Millard of Charm House discussed practical applications of interior decoration.

s/MRS. K. M. CURTS, *Program Chairman*.

**Michiana Auxiliary.**—The Women's Auxiliary to the Michiana Veterinary Medical Association

met at the Hotel Mishawaka in Mishawaka, Ind., on Nov. 8, 1951.

President Mrs. J. J. Fishler presided at the meeting, at which 13 members and two guests were present.

Reports were given on the availability and cost of radio time for veterinary discussions. A nominating committee composed of Mrs. G. G. Freier, Benton Harbor, Mich., chairman; Mrs. Kenneth Fraser, Niles, Mich.; and Mrs. D. L. Miller, Middlebury, Ind., was appointed. Mrs. Maurice Weldy, Wakarusa, Ind., introduced the guest speaker, Miss Margaret Stauffer, of Mannheim, Germany, an exchange student at Bethel Mennonite College, whose topic was "Conditions and Problems in Germany Today."

After the meeting, the veterinarians and their wives attended a cocktail party at the home of Dr. and Mrs. W. G. Magrane, Mishawaka, in honor of Dr. C. E. DeCamp, Scarsdale, N.Y., and Dr. and Mrs. Roy Wescott, of Constantine, Mich.

s/MRS. D. L. MILLER, *Secretary*.

**Missouri Auxiliary.**—The Women's Auxiliary to the Missouri Veterinary Medical Association met at the Hotel Daniel Boone, Columbia, on Oct. 9, 1951.

During the business meeting, reports were heard from the representative to the AVMA annual meeting in Milwaukee. A report indicated that the loan fund is being used and a motion was made and carried that it be named the "Jean Durant Loan Fund" in honor of the late Mrs. Adrian Durant. Another \$100 was added to this fund, which gives us a working capital of \$300.

For entertainment, members of the Cosmopolitan Club of the University of Missouri told stories of their native countries.

The group was invited to a "coffee" the following morning by members of the University of Missouri veterinary faculty wives organization. The meeting adjourned to meet again at the regular time in the spring.

s/MRS. J. K. FARRELL, *Secretary*.

**West Virginia Auxiliary.**—The Women's Auxiliary to the West Virginia Veterinary Medical Association will meet in a social session at the Greenbrier Hotel, White Sulphur Springs, on Feb. 17-18, 1952. Members of the Virginia auxiliary, and Mrs. Bild, president of the Women's Auxiliary to the AVMA, have been invited to attend this meeting.

s/(MRS. E. R.) VALENA H. COON, *President*.

## APPLICATIONS

### Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article

X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

**BAKER, DURWOOD L.**

Veterinary Clinic, Iowa State College, Ames.  
D.V.M., Iowa State College, 1943.

**ETOR, FREDERICK ROBERT**

26 N. Skokie Valley Rd., Highland Park, Ill.  
D.V.M., Ontario Veterinary College, 1949.

**FRIEDLEY, STANLEY M.**

Box 134, Decatur, Ind.  
D.V.M., Indiana Veterinary College, 1917.

**HAMORSZKY, KALMAN R.**

3226 Greenwood Drive, Waco, Texas.  
D.V.M., Texas A. & M. College, 1940.

**HENSON, WILLIAM R.**

74 East Main, Shelby, Ohio.  
D.V.M., Ohio State University, 1933.

**KOCH, BERNARD**

4257 Los Gatos Highway, Santa Cruz, Calif.  
D.V.M., State College of Washington, 1935.

**MCCOY, JOHN R.**

438 Livingston Ave., New Brunswick, N.J.  
D.V.M., University of Pennsylvania, 1940.

**1951 Graduate Applicants**

**First Listing**

The following graduate received his veterinary degree in November, 1951, and applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters.

**Ontario Veterinary College**

**SPARROW, LAWRENCE A.**

2314 Seventh Street, S.W., Calgary, Alta.  
D.V.M., Ontario Veterinary College, 1951  
Vouchers: T. Lloyd Jones and Frank J. Cote.

**Applicants — Not Members of Constituent Associations**

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorers.

**Second Listing**

**CORDERO, RAFAEL**, Veterinary Station Hospital,  
Fort Bliss, Texas.

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**U. S. GOVERNMENT**

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**Examination for Veterinarians for Public Health Corps.**—A competitive examination for

appointment of veterinarians to the Regular Corps of the U. S. Public Health Service will be held on April 1-3, 1952, at various points in the United States. Applications must be received no later than Feb. 26, 1952. For further information and application forms, write to the Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C. Attention: Division of Commissioned Officers.

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**Laboratory Training Courses.**—The schedule of laboratory training courses to be given by the Communicable Disease Center, January to December, 1952, has been prepared. Information and application forms should be requested from: Chief, Laboratory Training Services, Communicable Disease Center, U. S. Public Health Service, P. O. Box 185, Chamblee, Ga.  
s/R. F. REIDER

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**Veterinary Personnel Changes.**—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of Nov. 23, 1951

**NEW APPOINTMENTS**

James W. Allen, Mexico City, Mex.  
Mrs. Norma S. Baluyut, Chicago, Ill.  
Primitivo M. Baluyut, Chicago, Ill.  
Marciano V. de Vera, Omaha, Neb.  
Floyd W. Frank, Portland, Ore.  
Angel M. Galang, Omaha, Neb.  
John D. Galbreath, Fort Worth, Texas.  
Wilkie H. Lee, Houston, Texas.  
Julian S. Lizardo, San Francisco, Calif.  
Elton V. Parsons, Little Rock, Ark.  
Pacifico C. Rubio, Cincinnati, Ohio.  
Thomas P. Sardone, Chicago, Ill.  
Milton Savan, Amsterdam, Holland.  
Jorge S. Simon, St. Louis, Mo.  
James K. Taylor, Mexico City, Mex.  
Mario S. Tongson, Mason City, Iowa.  
Vernon Ward, Boise, Idaho.  
James H. Wommack, Olympia, Wash.

**MILITARY FURLOUGH**

Wiley B. Tanner, Topeka, Kan.  
John W. Van Zandt, Richmond, Va.

**SEPARATED (MILITARY SERVICE)**

King S. Daniels, Waterloo, Iowa.

**RESIGNATIONS**

Aaron P. Antoinen, St. Paul, Minn.  
John P. Arnold, St. Paul, Minn.  
Maurice S. Batson, Jackson, Miss.  
Clarence L. Bohan, St. Paul, Minn.  
L. Dale Cherry, St. Paul, Minn.  
LeRoy T. Christensen, St. Paul, Minn.  
Odin E. Dove, St. Paul, Minn.  
Emery H. Enge, St. Paul, Minn.  
Raymond P. Finster, St. Paul, Minn.  
Dean E. Flagg, West Fargo, N. Dak.  
Daniel P. Griswold, Mexico City, Mex.  
Chris Jorgensen, St. Paul, Minn.  
Emil V. Larson, St. Paul, Minn.  
John Mason, Mexico City, Mex.  
George C. Nugent, St. Paul, Minn.  
Arvid W. Nylene, St. Paul, Minn.  
Harold H. Rower, St. Paul, Minn.  
Charles E. Siemer, St. Paul, Minn.  
David M. Strohauer, Portland, Ore.  
Marvin S. Thorpe, St. Paul, Minn.  
Henry A. Tillitt, III, Mexico City, Mex.  
James C. Trace, Columbus, Ohio.  
Russell L. Toops, Mexico City, Mex.  
Dean W. Werring, St. Paul, Minn.



## TERMINATIONS

Donald K. Christian, St. Paul, Minn.  
Hughie G. Dunne, St. Paul, Minn.  
Clifford O. Enge, St. Paul, Minn.  
Josiah A. Given, St. Paul, Minn.  
Vernon K. Jensen, St. Paul, Minn.  
Hesser Knipe, St. Paul, Minn.  
William R. Leighty, St. Paul, Minn.  
John McKay, Jr., St. Paul, Minn.  
Thomas P. Nankervis, St. Paul, Minn.  
John A. Quirk, St. Paul, Minn.  
Henry J. Ruebke, St. Paul, Minn.

## RETIREMENTS

Walter H. Beck, Lansing, Mich.  
Raymond A. Blackman, Richmond, Va.  
Floyd E. Hill, Cleveland, Ohio.  
John H. Moore, South St. Paul, Minn.  
Albert J. Noonan, Madison, Wis.  
Frederick Rife, Cleveland, Ohio.

## DEATHS

Herbert J. Eichhorn, Columbus, Ohio.  
John B. Thompson, Scottsbluff, Neb.  
Wilbur H. Wiswell, Baltimore, Md.  
John W. Woods, Baltimore, Md.

## TRANSFERS

Harold C. Caudle, from Sacramento, Calif., to Nashville, Tenn.  
Dudley D. Conner, from Baton Rouge, La., to Jackson, Miss.  
Arthur F. Eckert, from Topeka, Kan., to New York City.  
Roscoe E. Fahnestock, from Little Rock, Ark., to Kansas City, Mo.  
Oliver E. Flory, from Chicago, Ill., to Topeka, Kan.  
Dale W. Glascock, from New York City, to Washington, D. C.  
Glen C. Harrington, from Miami, Okla., to Rapid City, S. Dak.  
Allie A. Holbrook, from Fort Worth, Texas, to Fort Dodge, Iowa.  
Charles Johnson, from Fort Dodge, Iowa, to West Fargo, N. Dak.



Dr. Tierkel, assistant chief, Veterinary Public Health Services of the Communicable Disease Center, Atlanta, and chairman, AVMA Committee on Rabies, returned to the United States early this month after touring Europe, Africa, and Asia for three months under the auspices of the World Health Organization of the United Nations.

Milo L. Johnson, from Amsterdam, Holland, to Topeka, Kan.  
Alexander G. Johnstone, from Richmond, Va., to Cleveland, Ohio.  
Peter B. Molitor, from Rapid City, S. Dak., to West Fargo, N. Dak.  
Thomas A. Moir, from Wichita, Kan., to Madison, Wis.  
Andrew W. Monlux, from Washington, D. C., to Denver, Colo.  
Robert K. Morris, from Mexico City, Mex., to Baton Rouge, La.  
S. Herman Parker, from Chicago, Ill., to Los Angeles, Calif.  
Clayton J. Price, from Kansas City, Kan., to Scottsbluff, Neb.  
George W. Spangler, from Montgomery, Ala., to Mexico City, Mex.  
Earl W. Stapp, from Detroit, Mich., to Amarillo, Texas.  
Leo P. Sullivan, from West Fargo, N. Dak., to Wichita, Kan.  
William J. Sullivan, from Boston, Mass., to Richmond, Va.  
George G. Tanenbaum, from New York City, to West Fargo, N. Dak.

## AMONG THE STATES AND PROVINCES

### California

**Conference of Public Health Veterinarians.**—The fifth annual conference of Public Health Veterinarians was held in San Francisco on Oct. 29, 1951, in conjunction with the seventy-ninth annual meeting of the American Public Health Association.

Officers elected to serve the Association for the coming year included Drs. Frank Todd, Arlington, Va., president; LeRoy Davenport, Springfield, Ill., vice-president; R. K. Anderson, Denver, Colo., secretary-treasurer. Executive Board members are Drs. H. G. Geyer, Columbus, Ohio; W. O. Kester, Washington, D. C.; Martin D. Baum, Denver, Colo.; and Ben Dean, Piedmont, Calif.

Those attending the conference heard papers on "Care of Wounds Inflicted by Rabid Animals," "Development of Veterinary Public Health," "Civil Defense Planning as Related to Biological Warfare and Food Hygiene," "Veterinary Responsibilities in Civil Defense," "Animal Nutrition and Its Effect on Public Health," along with other papers on animal diseases.

S/R. K. ANDERSON, Secretary.

### Florida

**State Association.**—The twenty-second annual meeting of the Florida State Veterinary Medical Association was held at the Hotel Floridan, Tampa, on Oct. 28-30, 1951.

The following guest speakers appeared on the program: **Drs. Ed E. Chambers**, Rossville, Ga.; **Clarence R. Cole**, Department of Pathology, Ohio State College, Columbus; **John Elliott**, (Sc.D.), director of the Dade County blood bank, Miami; **Melvin H. Knisely** (Ph.D.), the Medical College of South Carolina, Charleston; **William G. Magrane**, Mishawaka, Ind.;



and **Abner H. Quin**, Professional Service Division, Jensen-Salsbery Laboratories, Kansas City, Mo.

One of the features of the program was a small animal clinic with demonstrations of Kingma infusion tubing, feline nasal catheter, extirpation of anal gland with local anesthesia, epidural anesthesia, use of curare, tonsillectomy (electric snare), removal of Harderian gland, liver biopsy, diagnosis of histoplasmosis, diaphragmatic hernia, eye surgery, hysterectomy, and blood transfusion.

**Dr. Earle Clawson** was toastmaster at the annual banquet and dance.

Officers elected at this meeting are Drs. C. E. Dee, Hollywood, president; Ronald Jackson, St. Augustine, vice-president; and Robert P. Knowles, Miami, secretary-treasurer.

*S/DORSEY A. SANDERS, Resident Secretary.*

## Illinois

**Conference of Research Workers in Animal Diseases.**—The thirty-second annual meeting of the Research Workers in Animal Diseases was held in the Palmer House, Chicago, Nov. 26, 1951. The following veterinarians were on the program: **Drs. Norman D. Levine** (Ph.D.), Urbana; **J. R. M. Innes**, San Antonio, Texas; **H. Marsh**, Bozeman, Mont.; **Jesse Sampson** and **Rebecca Borton**, Urbana; **Leslie E. McDonald**, **R. E. Nichols**, **Joseph Simon**, and **S. H. McNutt**, Madison, Wis.; **A. F. Sellers**, **W. R. Pritchard**, **W. J. Hadlow**, and **J. H. Sautter**, St. Paul, Minn.; **C. L. Davis**, Denver, Colo.; **C. G. Wills**, Guelph, Canada; **C. F. Helmbolt** and **E. L. Jungherr**, Storrs, Conn.; **Howard W. Dunne**, East Lansing, Mich.; **George A. Young, Jr.**, Austin, Minn.; **W. W. Bay**, **L. P. Doyle**, **C. R. Donham**, **F. V. Washko**, **Harold E. Moses**, and **L. M. Hutchings**, Lafayette, Ind.; **James H. Gillespie**, Ithaca, N.Y.; **Ronald Gwatkin**, Hull, Canada.

Some of the subjects discussed were: encephalomyelomalacia caused by nematode larvae, unexpected variations in the plasma carotene and vitamin A of cattle, an attempt to produce ketosis in the ruminant by the administration of the lower fatty acids, transplantation of fertilized ova in the cow, corpus luteum in the maintenance of bovine pregnancy, gas-serian ganglion in animal rabies, infectious enteritis of mink, neuropathologic diagnosis of hog cholera, gastroenteritis in swine, canine distemper and infectious hepatitis, vibriosis in cattle, brucellosis, avian lymphomatosis, and Newcastle disease.

*S/A. G. KARLSON, Secretary.*

**Mississippi Valley Association Officers.**—Officers elected at the annual meeting of the Mississippi Valley Veterinary Medical Association held Oct. 31-Nov. 1, 1951, at the Hotel Pere Marquette in Peoria are Drs. C. L. Mc-

Ginnis, Peoria, president; **R. J. Kirkpatrick**, Galesburg, vice-president; **A. C. Gathman**, Galva, secretary-treasurer. Drs. **W. R. Theobald**, **Bushnell**, and **Joe Albrecht**, Princeton, were elected board members. **Dr. Wm. Angerer**, Atkinson, was elected to the executive board of the state Association.

Fifty-three feed men and 131 veterinarians registered for this meeting.

*S/R. J. KIRKPATRICK, Vice-President.*

**American Society of Animal Production.**—The forty-third annual meeting of the American Society of Animal Production was held Nov. 23-24, 1951, in the Hotel Sherman in Chicago.

Of the 11 sections, four were on nutrition and comprised 48 different subjects, including effects of trace minerals on utilization of protein, treatment of various deficiencies, and effect of various antibiotics on growth and metabolism. Other sections were on breeding and genetics, physiology, pastures and forages, and meats.

**Anthrax Outbreaks in State.**—From Aug. 16 to Oct. 25, 1951, ten outbreaks of anthrax occurred in Illinois, resulting in the death of approximately 275 head of swine and 7 cows. Laboratory diagnosis by the University of Illinois College of Veterinary Medicine, the Illinois State Division of Livestock Industry, and Corn Belt Laboratories confirmed nine of the outbreaks.—*Illinois Vet. Bull.*

## Indiana

**North Western Association.**—The North Western Indiana Veterinary Medical Association met in Lowell on Oct. 25, 1951. **Mr. J. A. Meaney**, of the Chicago Board of Health, explained the proposed law to become effective on shipments of milk into Chicago on Jan. 1, 1952. **Drs. T. K. Jones**, Indianapolis, veterinarian in charge, state BAI; and **Roy Elrod**, state veterinarian, also discussed this matter.

*S/J. L. KIXMILLER, Resident Secretary.*

**South Western Association.**—The South Western Indiana Veterinary Medical Association met at Fort Branch, on Nov. 1, 1951, to hear **Dr. A. Henry Craige** of Indianapolis, who is with Pitman-Moore Company, discuss milk fever and acetoneuria.

*S/J. L. KIXMILLER, Resident Secretary.*

**Sixth District Association.**—The Sixth District (Ind.) Veterinary Medical Association met at the Old Trails Inn south of Greencastle on Nov. 7, 1951, to hear **Dr. H. E. Moses** of Purdue University discuss antibiotics. **Dr. G. R. Oldham**, Kokomo, president of the Indiana Veterinary Medical Association, urged all veterinarians to join the Association.

*S/J. L. KIXMILLER, Resident Secretary.*

**Kentucky**

**Dr. Eastin To Study in Brazil.**—During the coming year, Dr. Charles E. Eastin (OSU '51), Lexington, will study the problems of dairy and beef husbandry among the Brazilian government herds of registered Zebu (Nelore) cattle and water buffalo in the Amazon Valley of Brazil. Dr. Eastin is working under a grant from the Rockefeller Foundation, made possible by a co-operative arrangement with the Instituto Agromico do Norte of the Brazilian Ministry of Agriculture. This is the first time such a grant has been made. The work, primarily pioneer in nature since little such work has been done in this area, will also include some research.

**Massachusetts**

**State Association.**—The regular monthly meeting of the Massachusetts Veterinary Association was held Nov. 28, 1951, at the Hotel Beaconsfield, Brookline. Dr. Cornelius Thi-beault, Wakefield, was moderator of a panel discussion "The Practice of Veterinary Medicine." Some of the topics discussed were principles of office practice, hospital routines, control of infection, diagnostic and therapeutic aids, public relations, and consultations and referred patients.

s/C. LAWRENCE BLAKELY, *Secretary.*

**Minnesota**

**Short Course.**—The University of Minnesota's twenty-eighth annual short course for veterinarians was held at University Farm on Oct. 25-26, 1951, with 96 veterinarians and 109 members of the staff of the School of Veterinary Medicine and veterinary students in attendance.

Guest speakers included **Drs. H. R. Cox**, Lederle Laboratories, Pearl River, N. Y.; **W. H. Dreher**, Badger Breeders' Cooperative, Shawano, Wis.; **F. W. Gehrman**, president of the Twin City Veterinary Medical Society, Minneapolis; **George Hartle**, Minneapolis; **George Keller**, field veterinarian, State Livestock Sanitary Board, St. Paul; **D. S. Steele**, Minneapolis; and **R. L. West**, secretary and executive officer, Minnesota State Livestock Sanitary Board, St. Paul.

Some of the topics discussed were: breeding problems in cows, teat surgery, biological products in control of poultry diseases, modified virus vaccines for hog cholera and other diseases, and brucellosis.

s/HENRY J. GRIFFITHS, *Resident Secretary.*

**Twin City Society.**—On Oct. 25, 1951, the Twin City Veterinary Medical Society met at University Farm, St. Paul. Dr. H. R. Cox, Lederle Laboratories, Pearl River, N. Y., discussed rabies and distemper immunization for dogs. **Drs. George W. Mather**, School of Veterinary Medicine, University of Minnesota; **D. S. Steele**, Minneapolis; and **George Hartle**,

Minneapolis, led the ensuing discussion. **Drs. R. L. West**, secretary and executive officer of the Minnesota State Livestock Sanitary Board, and **George Keller**, field veterinarian for the Board, told of new changes in the brucellosis control program.

s/HENRY J. GRIFFITHS, *Resident Secretary.*

**Missouri**

**Kansas City Association.**—On Nov. 20, 1951, the Kansas City Veterinary Medical Association met in the Hotel Continental to hear a symposium presented by the School of Veterinary Medicine of the University of Missouri. Guest speakers included **Dean A. H. Groth**, **Drs. Cecil Elder**, **D. E. Rodabaugh**, **E. F. Ebert**, and **A. A. Case**.

s/K. M. CURTIS, *Secretary.*

**Montana**

**Dr. Seghetti Appointed Secretary of Examining Board.**—Dr. Lee Seghetti, Veterinary Research Laboratory, Montana State College, Bozeman, has been appointed secretary of the Montana State Board of Veterinary Medical Examiners to replace Dr. Howard Welch who retired in September, 1951. Dr. Welch will reside in Phoenix, Ariz.

s/A. M. JASMIN, *Resident Secretary.*

**New York**

**New York City Association.**—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the New York Academy of Sciences on Nov. 7, 1951. The motion picture, "Ascariasis," was presented through the courtesy of the Department of the Army, Fort Wadsworth, N. Y.

**Dr. Lawrence E. Young**, associate professor of medicine, University of Rochester, discussed (with illustrations) blood groups in dogs.

The special occasion of the meeting was the observance of "Past-President's Night." The names and terms of office of deceased past-presidents were read and a moment of silence was dedicated to their memory. Past-presidents attending each gave a brief account of his predecessor and his term of office. These included **Drs. R. S. MacKellar, Sr.**, 1920-1922; **R. J. Garbutt**, 1930; **J. B. Engle**, 1939-1940; **B. J. Finkelstein**, 1943-1944; **E. R. Cushing**, 1945-1946; **L. Goss**, 1947-1948; **S. Shapera**, 1949; and **J. Stuart Crawford** 1950. **Drs. E. B. Ackerman**, 1910; **J. Elliott Crawford**, 1923-1934; **Bruce Blair**, 1925-1926; **H. K. Miller**, 1929; **O. E. McKim**, 1931-1932; **A. Eichhorn**, 1933-1934; **R. S. MacKellar, Jr.**, 1937-1938; and **C. E. DeCamp**, 1941-1942, were unable to be present.

s/C. R. SCHROEDER, *Secretary.*

**American Animal Hospital Association.**—On Dec. 5, 1951, a regional meeting of the American

Animal Hospital Association was held at the New York Academy of Science in New York City. The program featured a round-table discussion of hospital management, short cuts in veterinary practice, value and use of a technical laboratory, and anesthesia. After this meeting, members attended the meeting of the Veterinary Medical Association of New York City.

S/WAYNE RISER, *Executive Secretary.*

### North Carolina

**Central Carolina Association.**—The Central Carolina Veterinary Medical Association met in Greensboro, N. Car., on Nov. 14, 1951, to hear a group discussion of papers presented at the meeting of the Southern Veterinary Medical Association. Forty-five veterinarians and their wives attended the meeting.

S/CLYDE W. YOUNG, *Resident Secretary.*

### Pennsylvania

#### **Grand Council, Omega Tau Sigma Fraternity.**

—The twenty-fourth annual meeting of the Grand Council, Omega Tau Sigma fraternity, was held Oct. 19-20, 1951, at the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, with the Alpha Chapter acting as host. Thirty-nine delegates, faculty members, and guests attended. These included representatives from chapters at Alabama, Cornell, Georgia, Ohio State, and Ontario. At the regular business meeting, the following officers were elected: Drs. J. T. Burris, Ohio State University, president; C. MacKay, Ontario, vice-president; D. S. Folse, Alabama, secretary; E. Sunderville, Cornell, treasurer; J. R. Palmer, Georgia, historian; and J. E. Martin, University of Pennsylvania, publicity chairman.

The 1952 meeting will be held at Ohio State University, Columbus.

Following the business meeting, a successful banquet was held. Honored guests included Dr. R. A. Kelser, dean, School of Veterinary Medicine, University of Pennsylvania; LeRoy Davenport, Springfield, Ill., toastmaster; and Mark Allam, of the University of Pennsylvania School of Veterinary Medicine, speaker of the evening. An enjoyable party and dance was held at the home of the Alpha chapter.

• • •  
**Bucks-Montgomery Association.**—On Nov. 14, 1951, members of the Bucks-Montgomery Veterinary Medical Association met in Clinic Hall at Bolton Farms, Emile, to hear Dr. D. T. O'Connor, of the University of Pennsylvania, discuss and illustrate clinical demonstrations.

S/V. W. RUTH, *Secretary.*

• • •  
**Officers of Del-High Association.**—Officers of the Del-High Veterinary Medical Association are Drs. Elwood Borger, Ackermanville, president; Sam Cavanaugh, Quakertown, vice-president; F. Murray Iobst, Allentown, secretary-treasurer; and Sherman Ames, Easton, trustee, Pennsylvania Veterinary Medical Association.

S/F. MURRAY IOBST, *Secretary.*

• • •  
**Keystone Association.**—Dr. C. E. DeCamp, veterinary consultant for Pitman-Moore, discussed virus diseases and new developments in the field of biological products at the Nov. 28, 1951, meeting of the Keystone Veterinary Medical Association.

Officers of the Association are Drs. A. Bachrach, Philadelphia, president; E. Stearly, Phoenixville, vice-president; Raymond C. Snyder,

### Grand Council, Omega Tau Sigma Fraternity



Front row (left to right)—Drs. C. MacKay, D. S. Folse, E. Sunderville, J. T. Burris, J. Martin, J. R. Palmer.  
Middle row—Mr. L. S. McKibben, Dr. D. A. Perry, Messrs. J. Dingwall, R. Skillan, E. G. Ongert, D. J. Williams, and C. B. King.  
Back row—Messrs. S. T. Bickly, J. W. McVicar, W. J. Twinnig, P. W. Murdick, S. Fox, and C. Giddens.

Philadelphia, corresponding secretary; Leonard Krawitz, Philadelphia, recording secretary; and Don G. Lee, Drexel Hill, treasurer. The Board of Trustees includes Drs. S. F. Scheidy, Drexel Hill; James Mark, Bryn-Mawr; Vincent Ruth, Lansdale; Charles Neuhaus, Philadelphia; and Milton Stoudt, Philadelphia. Dr. S. F. Scheidy, a member of the Keystone Association, was elected president-elect of the Pennsylvania Veterinary Medical Association at its recent convention.

• • •  
**Northern Tier Association.**—The Northern Tier Veterinary Medical Association met at the Packard Hotel, Canton, on Oct. 31, 1951. Guest speaker was **Mr. H. L. Brunner**, in charge of Pennsylvania dog law enforcement, Pennsylvania Bureau of Animal Industry, Harrisburg, who discussed rabies in livestock. Officers of this association are Drs. Robert G. Little, Williamsport, president; W. J. Seagers, Knoxville, vice-president; J. Ross Wiley, Wellsboro, secretary-treasurer. Dr. Little was also elected member to the Board of Trustees of the Pennsylvania Veterinary Medical Association.

s/J. ROSS WILEY, Secretary.

• • •  
**Penn-Allegheny Association.**—The Penn-Allegheny Veterinary Association met at the Elk's Lodge, Johnstown, Nov. 8, 1951. The guest speaker was **Dr. R. D. Hoffman**, Bedford, who discussed teat surgery. Officers elected at this meeting are Drs. R. D. Hoffman, Bedford, president; J. C. Shook, State College, secretary-treasurer; and K. J. Thomas, Johnstown, delegate.

s/ROSS T. MICKLE, Secretary.

• • •  
**Western Association Officers.**—Officers of the Western Pennsylvania Veterinary Medical Association are Drs. John Q. Phillips, Pittsburgh, president; Geo. R. Bennett, Pittsburgh, vice-president; and Geo. B. Schuey, Wilkinsburg, secretary-treasurer.

s/G. B. SCHUEY, Secretary.

• • •  
**Personal.**—Dr. L. A. Klein (UP '97), Moylan, who received the 1951 Borden Award for "outstanding research contributing to dairy cattle disease control," is recovering from a fracture of the hip. Dr. Klein was formerly dean of the University of Pennsylvania School of Veterinary Medicine.

## Puerto Rico

**Visitors from United States.**—Dr. and Mrs. J. G. Hardenbergh, Evanston, Ill., Dr. C. L. Miller, Oak Park, Ill., and Mrs. A. E. Bott, Belleville, Ill., visited Puerto Rico on their way home from the First Pan American Congress of Veterinary Medicine held in Lima, Peru, Oct. 20-26, 1951.

Unexpected delay in transportation cut their

proposed stay of two days to just a few hours, thus upsetting the plans of the local veterinarians for their entertainment. Impromptu activities consisted of a quick sunrise tour through the city of San Juan, its suburbs, and the University, followed by an informal breakfast at the Caribe-Hilton Hotel, a glance at the stores by the women, and a visit to the local BAI office.

The Puerto Rican veterinarians deeply regret that their visit was so short and hope they will come back again for a longer stay.

s/O. A. LOPEZ-PACHECO,  
Resident Territorial Secretary.

• • •  
**Dr. Bagué Honored.**—The appointment of Dr. Jaime Bagué (UP '14) as special representative of the Biological Society of Brazil to attend the Second Veterinary Congress of Zoötecnicos in Spain last October came as a complement to his election as honorary member of that society.

The distinction was awarded to Dr. Bagué in recognition of his work "Glossary of Animal Biology" written in English and Spanish, acknowledging it as the first work of its kind to be published.

s/O. A. LOPEZ-PACHECO,  
Resident Territorial Secretary.

• • •  
**Rabies Situation in Puerto Rico.**—Since March, 1950, there have been 96 cases of laboratory-confirmed rabies in animals in Puerto Rico. The island was, up to that time, regarded as a rabies-free area. Animals with rabies have included cattle, goats, swine, horses, dogs, and mongooses.

Among measures to stamp out the outbreak, stricter enforcement of regulations governing entrance of dogs to the island have been resorted to, and the health department employs several laymen for vaccinating dogs, in contrast to the one veterinarian employed to supervise all veterinary public health activities.

Less than 10 per cent of the dogs have been vaccinated and the potential coöperation of the private practitioner in its rightful capacity has been completely ignored. It is noticeable, however, that not one single case of canine rabies has been clinically diagnosed by a veterinarian, although the estimated dog population is 100,000 with uncounted strays.

s/O. A. LOPEZ-PACHECO,  
Resident Territorial Secretary.

## Texas

**Cancer Research Association Organized.**—On Sept. 25, 1951, a committee composed of cattlemen, cancer researchers, and research workers in animal science met at the University of Texas, M. D. Anderson Hospital for Cancer Research, Houston, to organize an association to initiate and coöperate the research

in "cancer eye" of cattle. Further information may be obtained from William O. Russell, M.D., 2310 Baldwin St., Houston 6, Texas.

### Wisconsin

**Northeastern Association.**—New officers of the Northeastern Wisconsin Veterinary Medical Association elected at the Oct. 24, 1951, meeting are Drs. Loren J. Swanson, Bonduel, president; D. A. Funderberg, Oconto Falls, vice-president; D. H. Doudna, Lena, trustee for three years; and Dr. William Madson, Appleton, elected to the executive board of the Wisconsin State Veterinary Medical Association.

Speakers at the meeting were **Dr. Paul Gambrell**, Winnebago, Ill., who discussed swine diseases, and **Dr. H. J. O'Connell**, Madison, chief of the State Division of Livestock Sanitation, who discussed brucellosis. **Dr. R. V. Landis**, Appleton, showed motion pictures of a hunting trip in the Canadian Rockies.

S/WILLIAM MADSON, Secretary.

## FOREIGN NEWS

### England

**National Veterinary Congress.**—Lt. Col. R. O. Scott, V.C., New York City, represented the AVMA at the Congress of the National Veterinary Medical Association of Great Britain and Ireland at Eastbourne, Sept. 23-29, 1951, and presented a paper on "Veterinary Medicine in the United States." Among the topics discussed at the Congress were Johne's disease, effect of atomic weapons on domestic animals, genetics and animal breeding, hepatitis of dogs, parasitic bronchitis in cattle, and demonstrations of large animal surgery.

Social activities included a cocktail party, civic reception and dance, and the president's reception and dance.

S/LT. COL. R. O. SCOTT, V.C.

### Italy

**Hormones and Vitamins in Veterinary Medicine.**—On Sept. 16-17, 1951, the Societa Italiana per il Progresso della Zootecnica met in Milan to discuss the use of hormones and vitamins in veterinary science. Official lecturers included **Drs. N. Lagerlof** (Sweden), "The Use of Hormones and Vitamins with Special Respect to Veterinary Gynecology"; **F. Uselli** (Italy), "General Aspects of the Vitamin Problem in Veterinary Science"; **E. Letard** (French), "The Vitamins and Their Application to Breeding"; **E. Martini** (Italy), "Endocrine Correlations"; **H. Simonnet** (French), "The Utilization of Hormones in Zootechnic and in Veterinary Science"; **E. Cuboni** (Italy), "Sexual Hormones and Pregnancy Diagnosis"; and **E. J. Rowlands**

(Great Britain). "Serum Gonadotropin: Its Origin and Function in the Pregnant Mare."

Scientists from Italy, Belgium, France, Germany, Japan, Denmark, Israel, Switzerland, and Sweden attended the meeting.

S/T. BONADONNA, President.

### Germany

**New Veterinary Science Department.**—On May 28, 1951, the Berlin Chamber of Deputies opened a department for veterinary science in the Berlin Free University, and 208 students qualified for immediate admittance to the department. Until facilities are available, clinical demonstrations are held at a nearby estate and the western Berlin slaughterhouse.

S/MARTIN SIEBERT, Students' Speaker.

## EMERGENCY PLANNING

### Army to Order up Reserve Veterinarians in February

The Army will order fifteen priority 1 officers of the Veterinary Corps Reserve to active duty in February, Major General George E. Armstrong, Army Surgeon General has announced. The levy is the first involuntary call-up of Army veterinarians since the beginning of the Korean emergency.

Under Public Law 779 (doctor draft act), priority 1 registrants are defined as those educated at Government expense or deferred from service to pursue a professional education and who subsequently spent less than ninety days on active duty in World War II.

The precise date when men to be called up next year will have to report has not been determined but each will receive at least thirty days' notice prior to entering on active duty.

Reservists to be called up are distributed as follows among the six continental Army areas: First Army, 3; Second Army, 3; Third Army, 2; Fourth Army, 1; Fifth Army, 2; and Sixth Army, 4.

## VETERINARY MILITARY SERVICE

**Military Surgeons.**—The Association of Military Surgeons was organized in 1891. Membership is limited to officers of the medical services of the United States Government. The term "medical services" includes, besides the Medical Corps, the Dental Corps, Veterinary Corps, Medical Service Corps, Nurse Corps, and Women's Medical Specialist Corps.

The Association is governed by a president and five vice-presidents representing in rotation all of the services, a secretary, and an executive council which is composed of representatives of all sections, and its members appointed each year by the president.

Veterinarians eligible for membership are those who are or have at any time been commissioned officers in any Corps of the Medical Services of the Army, Navy, Air Force (including the National Guard and Organized Reserves) and U. S. Public Health Service.

The Association's journal, *The Military Surgeon*, is published monthly and a subscription is included in the \$5 annual dues.



Activities of the veterinary section have included the sponsoring of a veterinary panel at each annual convention, and presentation of an educational exhibit. An invitation is extended to all eligible veterinarians to join the Association. Application blanks may be obtained from the Association of Military Surgeons, Armed Forces Institute of Pathology, Washington 25, D. C.

The following speakers appeared on the program of the Veterinary Corps section during the fifty-eighth annual convention of the Association held in Chicago on Oct. 8-10, 1951: **Col. Oness H. Dixon, Jr.**, Chicago; **Dr. James H. Steele**, veterinary director, U. S. Public Health Service, Atlanta, Ga.; **Major William S. Gochenour, Jr.**, Army Medical Service Graduate School, Washington, D. C.; **Dr. G. M. Dack (M.D.)**, the University of Chicago; and **Lt. Col. John H. Rust, III**, University of Tennessee Atomic Energy Commission, Agricultural Research Project, Oak Ridge.

The Veterinary Corps of the Army and Air Force displayed an exhibit on brucellosis.

• • •

**Veterinary Volunteer List Exhausted.**—The Army Surgeon General's office contemplates requesting the office of assistant chief of staff for personnel, G-1, to order a limited number of veterinary Reserve officers to active duty. Quotas will be levied on the six continental Army areas.

The officers involuntarily ordered to active duty will be from among those veterinarians, registered under Public Law 779 and classified as priority 1, who accepted commissions in the Reserve.

With the exception of ten Veterinary Corps Reserve officers ordered involuntarily to active duty shortly after Korea, requirements for additional Veterinary Corps officers have been met by volunteers. (See Emergency Planning, p. 55.)

## MARRIAGES

Dr. (COR '49) Stanley Glick, first lieutenant in the Veterinary Corps, to Miss Grete Muller, New York City, on Sept. 8, 1951, in New York City.

## BIRTHS

Dr. (GA '50) and Mrs. John G. Herring, Thomasville, N. Car., announce the birth of a daughter, Doris Esther, on June 3, 1951.

Dr. (COR '45) and Mrs. Russell F. Greer, Carswell Air Base, Fort Worth, Texas, announce the birth of their second son, Randall Jeffrey, on Aug. 3, 1951. Dr. Greer is a captain in the Veterinary Corps of the U. S. Air Force and is base veterinarian at Carswell Air Base.

Dr. (UP '45) and Mrs. John H. Hopkins and Jack (age 2½ yr.), Hagerstown, Md., announce

the birth of Richard Thomas on Oct. 15, 1951.

Dr. (MSC '42) and Mrs. Francis G. Yabsley, Earlville, Ill., announce the birth of a son, Francis George, II, on Oct. 20, 1951.

Dr. (OSU '51) and Mrs. Leo S. Goldston, Hayward, Calif., announce the birth of a son, David Barry, on Oct. 28, 1951.

Dr. (KSC '41) and Mrs. Don O. Whitney, Atwater, Calif., announce the birth of a son, Larry Lee, on Oct. 31, 1951.

## DEATHS

★**Irving M. Cashell** (GWU '14), 63, Washington, D. C., died Oct. 12, 1951. From 1916 to 1919, Dr. Cashell was health officer of Goldsboro, N. Car., and served as the town's manager from 1918 to 1920. He worked for the U. S. BAI two years and then started his own practice, retiring in 1945 after a stroke. Dr. Cashell had been a member of the AVMA. He is survived by his widow; two sons, Irving G. (UP '38) and John; a daughter; and two grandchildren.

**John H. Copenhaver** (KCV '12), Houston, Texas, died Aug. 26, 1951. Dr. Copenhaver was a general practitioner.

★**William E. Cotton** (GWU '11), 84, Bethesda, Md., died Sept. 6, 1951. An obituary appears on page 37 of this JOURNAL.

★**Philip A. Hawkins** (MSC '44), 36, East Lansing, Mich., died of poliomyelitis in Muktschwar, India, on Oct. 30, 1951. He had been studying in India since April, 1951, on a U. S. Department of State Fulbright scholarship. Dr. Hawkins was widely known in the field of bacteriology and had written two books and two laboratory manuals in the field of animal parasitology. Collaborator with Dr. Hawkins on the books was Dr. Banner Bill Morgan, Ph.D., of the University of Wisconsin, who died suddenly in 1950.

A member of the Michigan State College faculty since 1939, Dr. Hawkins was a member of the Michigan Veterinary Medical Association, American Veterinary Medical Association, American Society of Parasitology, American Society of Tropical Medicine, Alpha Psi, Sigma Xi, and Phi Sigma.

At the time of his death, he was working on a cattle disease not found in the United States. He is survived by his widow, Helen Carter Hawkins, and two sons.

**George A. Young** (KSC '12), 62, Denver, Colo., died Sept. 3, 1951, following a long illness. Dr. Young practiced in Syracuse, Neb., from 1912 to 1935. He was employed by the U. S. Bureau of Animal Industry from 1935 to 1950, serving in Nebraska, Louisiana, and Missouri. He is survived by his widow, a daughter, and two sons.

★Indicates members of the AVMA



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Urinary tract infections of dogs—25 to 75 mg. per lb. body weight daily in divided doses at 8-hour intervals.

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Infectious diarrhea (white scours) of calves—

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Department of Veterinary Medicine

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## COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

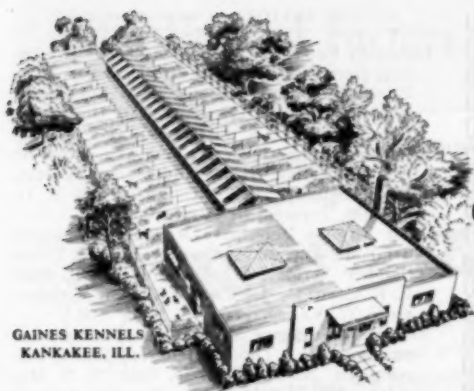
- American Association for the Advancement of Science. Annual meeting. Convention Hall, adjacent to the University of Pennsylvania School of Medicine, Philadelphia, Pa., Dec. 26-31, 1951. R. L. Taylor, 1515 Massachusetts Ave., N.W., Washington 5, D.C., assistant administrative secretary.
- Ohio State Veterinary Medical Association. Annual meeting. Deshler-Wallick Hotel, Columbus, Ohio, Jan. 2-4, 1952. Fred J. Kingma, Ohio State University, Columbus, Ohio, secretary.
- Oklahoma Veterinary Medical Association. Annual winter meeting. Mayo Hotel, Tulsa, Okla., Jan. 7-8, 1952. Lewis H. Moe, 1736 W. Third Ave., Stillwater, Okla., secretary.
- University of Pennsylvania. Conference for veterinarians. University of Pennsylvania, Philadelphia, Pa., Jan. 7-8, 1952. R. A. Kelsor, dean, School of Veterinary Medicine.
- Wisconsin Veterinary Medical Association. Annual meeting. Schroeder Hotel, Milwaukee, Wis., Jan. 8-10, 1952. B. A. Beach, Genetics Building, Madison 6, Wis., secretary.
- Indiana Veterinary Medical Association. Annual meeting. Severin Hotel, Indianapolis, Ind., Jan. 9-11, 1952. W. W. Garverick, Zionsville, Ind., secretary.
- New York State Veterinary College. Conference for veterinarians. Cornell University, Ithaca, N. Y., Jan. 9-11, 1952. W. A. Hagan, dean.
- Tennessee Veterinary Medical Association. Annual meeting. Reed House, Chattanooga, Tenn., Jan. 14-15, 1952. H. W. Hayes, 734 Boardway North East, Knoxville, Tenn., secretary.
- Kansas Veterinary Medical Association. Annual meeting. New Town House Hotel, Kansas City, Kan., Jan. 14-16, 1952. This is to be a joint meeting with the Missouri Veterinary Medical Association. Olin W. Morris, Parsons, Kan., secretary.
- Minnesota State Veterinary Medical Society. Annual meeting. St. Paul Hotel, St. Paul, Minn., Jan. 14-16, 1952. B. S. Pomeroy, University Farm, St. Paul 1, Minn., secretary.
- Missouri Veterinary Medical Association. Annual meeting. New Town House Hotel, Kansas City, Kan., Jan. 14-16, 1952. This is to be a joint meeting with the Kansas Veterinary Medical Association. J. L. Wells, Box 676, Kansas City, Mo., secretary.
- South Carolina Association of Veterinarians. Annual business meeting. Jefferson Hotel, Columbia, S. Car., Jan. 15, 1952. R. A. Mays, P. O. Box 1174, Columbia, S. Car., secretary.
- Iowa Veterinary Medical Association. Annual meeting. Fort Des Moines Hotel, Des Moines, Iowa, Jan. 16-18, 1952. F. B. Young, Waukegan, Iowa, secretary.
- Intermountain Veterinary Medical Association. Annual meeting. Newhouse Hotel, Salt Lake City, Utah, Jan. 21-23, 1952. M. L. Miner, Veterinary Science Department, Utah State Agricultural College, Logan, Utah, secretary.
- Michigan State College, School of Veterinary Medicine. Annual postgraduate conference for veterinarians. Michigan State College, East Lansing, Mich., Jan. 23-24, 1952. Chester F. Clark, dean.
- Illinois State Veterinary Medical Association. Annual meeting. Hotel Sherman, Chicago, Ill., Jan. 23-25, 1952. A. G. Misener, 6448 N. Clark St., Chicago 26, Ill., secretary.
- Ontario Veterinary Association. Seventy-eighth annual meeting. General Brock Hotel, Niagara Falls, Ont., Jan. 23-25, 1952. G. A. Edge, Box 37, Postal Station F, Toronto, Ont., secretary.
- Texas, State Veterinary Medical Association of. Annual meeting. Hotel Driscoll, Corpus Christi, Texas, Jan. 24-26, 1952. E. A. Grist, New Braunfels, Texas, secretary.
- Mississippi State Veterinary Medical Association. Annual meeting. Edgewater Gulf Hotel, Edgewater Park, Miss., Jan. 25-26, 1952. John A. Randle, West Point, Miss., secretary.
- California State Veterinary Medical Association. Annual midwinter conference. University of California School of Veterinary Medicine, Davis, Calif., Jan. 28-30, 1952. Charles S. Travers, 3004 16th St., Room 208, San Francisco 3, Calif., executive secretary.

(Continued on p. 54)



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(COMING MEETINGS — continued from p. 32)

Louisiana Veterinary Medical Association. Annual meeting and conference. Louisiana State University, Baton Rouge, La., Jan. 29-30, 1952. R. B. Lank, Louisiana State University, Baton Rouge 3, La., secretary.

New Jersey Veterinary Medical Association of. Annual meeting. Hotel Hildebrecht, Trenton, N. J., Feb. 7-8, 1952. J. R. Porteus, P. O. Box 938, Trenton, N. J., secretary.

West Virginia Veterinary Medical Association. Semiannual meeting. Greenbrier Hotel, White Sulphur Springs, W. Va., Feb. 17-18, 1952. E. R. Coon, 346-348 Capitol Building, Charleston 5, W. Va., secretary.

Alabama Veterinary Medical Association. Annual meeting. Thomas Jefferson Hotel, Birmingham, Ala., Feb. 24-26, 1952. I. S. McAdory, 301 East Magnolia, Box 410, Auburn, Ala., secretary.

Keystone Veterinary Medical Association. Monthly meeting. Philadelphia County Medical Society Building, Philadelphia, Pa., Feb. 27, 1952. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia, Pa., secretary.

Southeast Veterinary Medical Association. Spring meeting. Kennett, Mo., April 18, 1952. F. A. Stepp, Sikeston, Mo., secretary.

Alabama Polytechnic Institute. Annual conference for veterinarians. Alabama Polytechnic Institute, Auburn, Ala., June 5-7, 1952. R. S. Sugg, dean.

Kansas State College. Annual Conference for veterinarians. Kansas State College, Manhattan, Kan., June 6-7, 1952. E. E. Leasure, dean, School of Veterinary Medicine.

American Veterinary Medical Association. Annual meeting. Ambassador Hotel, Atlantic City, N. J., June 23-26, 1952. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

## Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association. the second Tuesday of each month. Howard F. Carroll, 2024 Lombard St., San Francisco 23, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. W. E. Smith, 516 Oatman, Sanger, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. J. T. Dixon, Winston-Salem, N. Car., secretary.

Chicago Veterinary Medical Association, the

(Continued on p. 36)

# Vital Natural Factors in Animal Nutrition



A natural rumen stimulant for treatment of non-pathogenic rumen dysfunction.

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RU-ZYME supplies normal rumen microflora,\* plus the enzymes, vitamins and trace minerals which enable the rumen to function properly and produce the best growth.



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Sold only to veterinarians*

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(COMING MEETINGS — continued from p. 34)

second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. V. D. Ladwig, Sac City, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month—September through May (except January)—at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Roger W. Grundish, 4217 Mayfield Road, South Euclid 21, Ohio, secretary.

East Bay Veterinary Medical Association, bi-monthly, the fourth Wednesday. Robert Clemens, 23352 Orchard, Hayward, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

(Continued on p. 38)



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KANSAS

Greater St. Louis Veterinary Medical Association, Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curtis, 70 Central Ave., Kansas City 18, Kan., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. Richard A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday night of each month from October through June, at the Hotel Essex House, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month. Write R. W. Worley, secretary, 3224 L.W.W., South Bend, Ind., for location.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Mid-Coast Veterinary Medical Association, the

(Continued on p. 40)

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**Preparative:** To improve and protect the nutritional status of the severely malnourished or critically ill patient . . . as fortification against the shock of major surgery.

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For use whenever dietary measures are inadequate for correction and maintenance of positive nitrogen balance . . . to replenish depleted body protein stores. Particularly indicated in preoperative and postoperative management, extensive burns, gastro-intestinal obstruction, etc.



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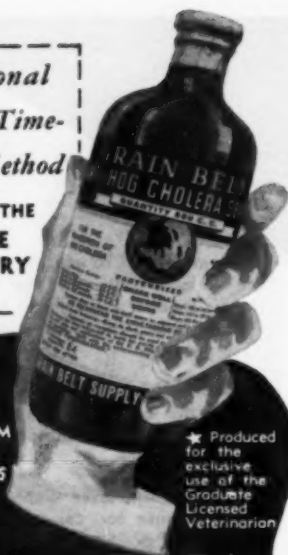
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(COMING MEETINGS — continued from p. 38)

first Thursday of every even month. C. Edward Taylor, 2146 S. Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark RJ, Del., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Clark Stillinger, 1742 E. Holt Ave., Pomona, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. P. H. Hand, Box 1035, Millbrae, Calif., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month, in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. L. G. Nicholson, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. John McChesney, 40 6th St., Petaluma, Calif., secretary.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, time and place specified monthly. B. H. Brow, Weldon, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month.

(Continued on p. 42)

# HOTEL RESERVATIONS — ATLANTIC CITY CONVENTION

Eighty-Ninth Annual Meeting, AVMA, June 23-26, 1952

The three Boardwalk hotels shown here will house most of the convention registrants. Fill out reservation form below and mail it to the Housing Bureau. If hotel of first choice is filled, your request will be forwarded to another hotel.

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## HOTELS AND RATES\*

Hotel	Single	Double†	Combination (2 rooms, 1 Bath)	Suite
1. Ambassador .....	\$6.00-12.00	\$8.00-14.00	\$16.00-25.00	\$20.00-26.00
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3. Ritz-Carlton .....	6.00-12.00	8.00-14.00	20.00-25.00	25.00-30.00

\*The Ambassador will be convention headquarters. Good accommodations are available in a wide range of prices at many hotels besides the three listed here; persons desiring accommodations at hotels other than those listed should write to the Housing Bureau, 16 Central Pier, Atlantic City—stating the type and price wanted. Number of single rooms is limited. All rates subject to 3 per cent municipal tax.

†All double rooms at the Ambassador and Ritz-Carlton have twin beds.

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To: Housing Bureau, 16 Central Pier, Atlantic City, N. J. Date .....

Please make reservations indicated below:

(Three choices **MUST** be shown.)

First choice hotel .....

Second choice hotel .....

Third choice hotel .....

Accommodations and Rates Per Day Desired:

- ☐ Single room at \$ .....
- ☐ Double-bed room at \$ .....
- ☐ Twin-bed room at \$ .....
- ☐ Suite at \$ .....
- ☐ Combination for ..... persons at \$ ..... per combination

Arriving on (date) ..... at ..... a.m. .... p.m.

Leaving on (date) ..... at ..... a.m. .... p.m.

Room will be occupied by (attach list of additional names if necessary):

Name ..... City and State .....

Name ..... City and State .....

Your Name (print or type) .....

Street Address .....

City ..... Zone ..... State .....

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Provides an accurate pattern against which to cut with knife or razor blade. Fits firmly, cannot move or slip when clamped into position. Made of non-rusting, light, cast aluminum, highly polished. Lasts a lifetime with minimum care. Simplicity of design and construction reduces possibility of breakage or mechanical failure. Forms immediately available to provide distinctive marking of these breeds:

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Set of above four — postpaid \$50.00

These patented "championship" forms are patterned after markings of winners of top honors in show competition. Forms for other breeds made on special order. Sold to veterinarians only. Send check or money order.



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Lansing, Michigan

(COMING MEETINGS — continued from p. 40)

Warren J. Dedrick, 904 S. Lemon, El Cajon, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, the second Friday of even months. Joe Ridgway, 1784 Thompson Blvd., Ventura, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, 8:00 p.m., at the Peckway Skeet Club, Robert P. Knowles, 2936 N.W. 17th Ave., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

### Foreign Meetings

Fifteenth International Veterinary Congress. Stockholm, Sweden, Aug. 9-15, 1953. Dr. L. de Blicke, Soestdijkseweg 113N., Bilthoven, Netherlands, secretary, Permanent Committee.

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Coramine with ephedrine, vial,  
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Coramine oral, quarts ..... \$22.50

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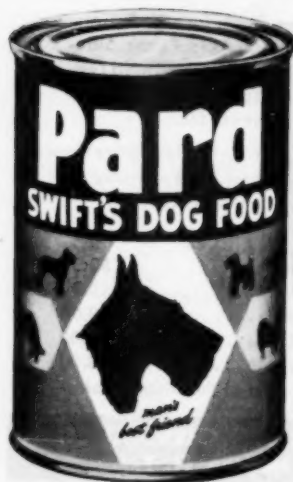
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Calcium	2.6 gms.	Niacin	18.2 mgs.
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**5 COMPARTMENT STALLS**  
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**HEAVILY GALVANIZED SHEETS**  
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Completely Assembled. Satisfaction Guaranteed.  
 SIZES: 3 upper stalls 24" x 24" x 28" deep.  
 2 lower stalls 24" x 36" x 28" deep.  
 Overall size: 6' wide x 5'6" high x 28 $\frac{1}{2}$ " deep.  
 Stalls Stand 6 in. off floor.



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Very truly yours,  
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Medal of Honor**

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assault up the fire-swept hill. In the traditional Infantry spirit, Captain Millett charged into the enemy positions, bayoneting two of his foes, then shouting encouragement to his troops, continued throwing grenades, and clubbing and bayoneting the enemy. Inspired by his example, the attacking unit routed the enemy, who fled in wild disorder.

"It's an uphill struggle," says Captain

Millett, "to build a working peace. Unfortunately, the only argument aggressors respect is *strength*. Fortunately we've learned this lesson in time.

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"I think a secure peace is worth working for. If you think so, too, buy United States Defense Bonds now."

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Remember that when you're buying bonds for national defense, you're also building a personal reserve of cash savings. Remember, too, that if you don't save *regularly*, you generally don't save at all. Money you take home usually is money spent. So sign up today in the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you bank. For your country's security, and your own, buy United States Defense Bonds now!

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25 lb. drum	.74 per lb.
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12 1/2 gram Bolus—Box of 100	5.15
2 gram Tablet—Bottle of 100	.98

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Vitamin C	5000 USP Units
Vitamin D	500 USP Units
Niacin	50 mg.
Bottle of 100	\$ 2.35
Bottle of 500	10.75

### OCTO-MINS — A, C, D, & B Complex — 8 Vitamin Capsule

Formula on request.

Bottle of 100	\$ 1.35
Bottle of 1000	11.00

### CALCIUM GLUCONATE USP POWDER

5 lb. can	\$.91 per lb.
10 lb. drum	.88 per lb.
25 lb. drum	.85 per lb.

### DEXTROSE USP POWDER

10 lb. drum	\$.40 per lb.
25 lb. drum	.35 per lb.
100 lb. drum	.29 per lb.

### UREA USP CRYSTALS

10 lb. drum	\$.28 per lb.
25 lb. drum	.24 per lb.

## SULFONAMIDES

### SULFANILAMIDE USP POWDER

1 lb. bottle	\$1.80 per lb.
10 lb. drum	1.70 per lb.
25 lb. drum	1.65 per lb.
100 lb. drum	1.55 per lb.

### SULFATHIAZOLE SODIUM USP POWDER

1 lb. bottle	\$4.95 per lb.
5 lb. bottle	4.90 per lb.

### SULFAPYRIDINE SODIUM POWDER

1 lb. bottle	\$10.00 per lb.
5 lb. bottle	9.75 per lb.

Write for Complete Price List

Terms 1% 10 days net 30 F.O.B. Chicago  
Freight Allowed on Shipments of 100 Lbs. or More  
Rocky Mountain and Pacific Coast Prices Slightly Higher  
Prices Subject to Change Without Notice

## AMERICAN CHEMICAL CO.

1116 West 37th Street, Chicago 9, Illinois

## CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, \$2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

Remittance must accompany order.

Deadline for want ads 8th of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

### Wanted—Veterinarians

**WANTED**—young veterinarian, graduate of AVMA-approved school, interested in mixed practice. Good future. Salary open. Modern small animal hospital. Located here in 1919. Address "Box N 16," c/o JOURNAL of the AVMA.

**STATE OF IDAHO, LIVESTOCK DISEASE CONTROL LABORATORY**—wants laboratory veterinarian for diagnostic work. Address Bureau of Animal Industry, Room 108 Statehouse, Boise, Idaho, for information.

**WANTED VETERINARIAN**—with professional and executive experience as technical adviser and research administrator for large pharmaceutical manufacturer. Some travel involved in maintenance of public relations. Address "Box P 5," c/o JOURNAL of the AVMA.

**WANTED**—assistant veterinarian for small animal practice. State full particulars, qualifications, and salary expected in first letter. Address Dr. James Patterson, 3800 Grand River, Detroit 8, Mich.

As part of its program of expansion, the Virginia Division of Animal Industry has openings for four qualified veterinarians, one as regional laboratory director and the others as field inspectors. Forty hour week, sick leave and annual leave allowances, and participation in a liberal retirement plan. For further information, address above agency, 1102 State Office Building, Richmond, Va.

Excellent opportunity for assistant in small animal practice in Connecticut. Good salary and living quarters. State qualifications and experience. Address "Box P 1," c/o JOURNAL of the AVMA.

**WANTED**—veterinarian for field work in T.B. and Bang's disease testing in State of Delaware. Apply to Dr. Harry McDaniel, Jr., Director, Livestock Sanitation, State Board of Agriculture, Dover, Del.

(Continued on p. 48)

## WHITE'S

### ANIMAL CASTRATION

A new text-book for TEACHERS, STUDENTS and PRACTITIONERS.

Price \$7.50

For sale by book dealers, also by the Author, George R. White, P. O. Lock Box 901, Nashville, Tennessee.

# Friskies

Authoritative information on the scientific care and feeding of dogs. **No. 13**  
Published by Albers Milling Company (a division of Carnation Company) under the supervision of Dr. E. M. Gildow, B.S., M.S., D.V.M., Director of Research.

## DOG RESEARCH NEWS

### Effect of Diet on Diarrhea

Many features of the diet may cause diarrhea in dogs. One of these is excessive fibre or indigestible material.



In their diet of Friskies, a complete food, these puppies get a sufficient amount of dried milk. Any additional milk may cause looseness.

Too much lactose often produces diarrhea. Commercial dog foods already contain sufficient milk. Any addition may cause diarrhea.

Black tongue is caused by a deficiency of nicotinic acid. In the latter stages, diarrhea with blood-tinged feces is observed. This is more prevalent where dogs do not get meat or meat products. Apparently the feeding of excessive amounts of corn predisposes to black tongue, because this extra amount increases the requirements of nicotinic acid (niacin). While commercial dog foods contain appreciable quantities of corn, the niacin supply is amply met. Also, the presence of considerable meat protein reduces the effect of excessive corn.

No evidence indicates that large amounts of well-cooked carbohydrates are responsible for diarrhea. But poorly cooked grains will cause it. And so will excessive amounts of improperly ground grains or flakes that are too thick.

Dietary causes of diarrhea may

be avoided by feeding a dog food like Friskies. The grains in Friskies are carefully processed and pre-cooked before supplements are added. Control of flakes and texture is rigid. There is no excessive fibre. And protein from animal sources is high. 20 years of testing at the Friskies Research Kennels have resulted in a food that is not only complete, but is also properly balanced.

### Tell Them About the Veterinarian

Breeders will agree that one of their responsibilities is to advise dog purchasers to select a veterinarian at once. Chances are the puppy has had only its "booster" shots, and will need permanent inoculations. "Shot time" presents a good opportunity for the owner to get to know the veterinarian.



20 years of research at the Friskies Research Kennels on the famous Carnation Milk Farms have resulted in a scientifically complete dog diet.

It is also a responsibility of breeders to recommend a diet the puppy will thrive on. The complete nourishment of a food like Friskies will contribute its full share toward keeping the dog in good health.

**HAVE A QUESTION?** Write Friskies, Dept. Y, Los Angeles 36, California.

"20 YEARS OF KEEPING DOGS FRISKY"



A FRISKY DOG IS A HEALTHY DOG  
KEEP YOUR DOGS FRISKY

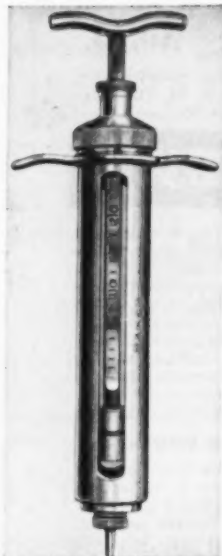
WITH

# Friskies

A COMPLETE DOG FOOD

5 SIZES:  
50, 25, 10,  
5, 2 lbs.

## Ranch Record Veterinary Syringe



Superior quality veterinary syringes—Choice of ground glass barrel with metal plunger or rubber packing—Accurate dosage and smooth operation always assured.

Inexpensive replacement parts available.

Inquire at your nearest veterinary dealer or wholesaler concerning this outstanding product.

Sizes 2 cc. to 40 cc.

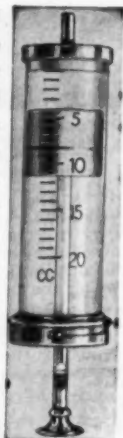
## Boston Record Syringes

High quality syringe consisting of graduated, ground, resistance glass barrel with nickel silver plunger and strongly constructed metal parts. No Washers—No Binding Rubber Packings to interfere with smooth operation. Easily disassembled for sterilization.

Low In Cost

Boston Record Syringes create sales for the dealer and satisfaction for the user.

Repair exchanges available.  
Sizes 1 cc. to 150 cc.



Literature Upon Request

**Boston Instrument Mfg. Co., Inc.**  
50 Thayer St., Boston 18, Mass.

(CLASSIFIED ADS — continued from p. 46)

**VETERINARIAN WANTED**—by veterinary research division of major company with widespread livestock interests, for clinical research and service work primarily in diseases of poultry. Must be recent graduate of AVMA-approved school, with interest and preferably experience in poultry disease control. Send detailed qualifications and picture to "Box P 14," c/o JOURNAL of the AVMA.

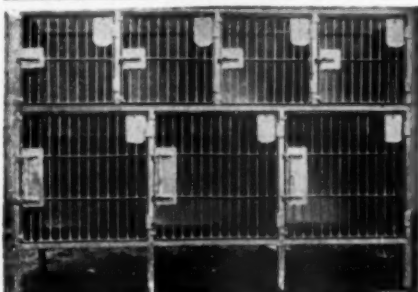
**WANTED**—A large pharmaceutical advertising agency, handling ethical accounts exclusively, seeks experienced veterinarian to organize and head specialized client service. Qualifications include: (1) thorough knowledge of veterinary practice and products; (2) ability to write sound, concise, scientific copy; (3) ability to deal with pharmaceutical executives. Location: New York City. Submit complete resumé. Address "Box P 15," c/o JOURNAL of the AVMA.

**WANTED**—veterinarian under 35 years to travel in Midwest. Salary open. Address "Box P 17," c/o JOURNAL of the AVMA.

**WANTED**—small animal assistant with some experience. Prefer one who might be interested in leasing or buying hospital in near future. Located in large eastern city. Good salary or percentage. Please give age, military status, etc. Address "Box P 19," c/o JOURNAL of the AVMA.

**WANTED**—assistant for mixed practice. State qualifications, experience, and salary expected. Ex-

(Continued on p. 52)



### RIVERSIDE ALL STEEL KENNELS—QUALITY FIRST

Seven Compartment. Upper tier 22x20x30. Lower tier 28x28x30. Five Compartment. Upper tier 22x20x30. Lower tier 27x31x30. Sliding doors may be installed between openings for extra large cages if desired. Bottoms of cages are galvanized. MINOR CHANGES IN DESIGN AND EQUIPPED WITH 3-inch ball bearing CASTERS AT NO EXTRA COST. Footproof latches and identification tags on steel barred doors. Bottom cages have six-inch ventilating strip. Shipment FOB our plant.

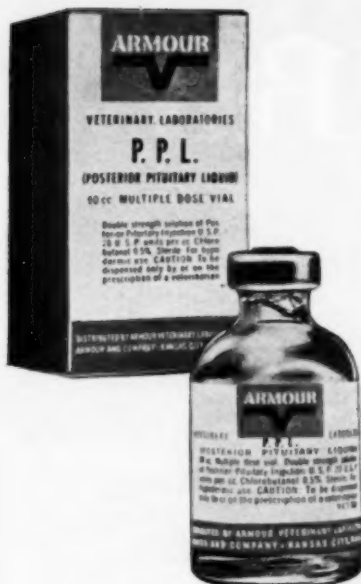
5 compartment	\$195.00
7 compartment	\$275.00
8 compartment	\$310.00 each

TERMS MAY BE ARRANGED IF DESIRED

A lifetime of service and guaranteed by one of California's oldest iron works.

**RIVERSIDE IRON WORKS**  
5422 Mission Blvd. Riverside, California





**versatile, dependable**

# P. P. L. - Armour

(posterior pituitary liquid — double U. S. P. strength)

P. P. L. (ARMOUR) is a sterile, aqueous solution of the physiologically active constituents of the posterior lobe of pituitary glands, obtained from food-producing animals by Armour Laboratories. It is twice U. S. P. strength . . . tested for potency and concentration...clearly stamped with expiration date.

**Sold to Graduate Veterinarians only**

## Indications

- Dystocia due to uterine inertia.
- Reduction of prolapsed uteri.
- Postoperative contractions of the uterus following Cesarean section.
- Delivery of retained placenta.
- Treatment of agalactia in sows.
- Agalactia in heifers and cows with extreme edema of the udder following parturition.
- Many other important uses. Complete details supplied to veterinarians on request.



VETERINARY LABORATORIES • KAW STATION • KANSAS CITY 18, KANSAS

# SQUIBB *offers*



# SQUIBB

# NOVOXIL UTERCAPS\*

*...for the treatment  
of retained placenta,  
metritis and pyometra*

**Description:** An elongated gelatin capsule containing approximately 0.36 grams of active colloidal silver oxide.

**Indications:** For the treatment of retained placenta, metritis and pyometra in cows and mares.

**Advantages:** Easy to insert. Extremely effective. Economical. Nontoxic. Stable.

**Dosage:** *Retained placenta*—Insert one Utercap into each horn of the uterus. If the condition of the uterus prevents insertion into the horns, place two Utercaps into the uterine cavity or deeply into the cervical canal. If infection persists after 7 days, insert an additional Utercap.

*Metritis*—Insert two Utercaps into the uterus; one into each horn if possible. If the infection persists after 7-10 days, insert an additional Utercap.

*Pyometra*—Insert two Utercaps into the uterus. If the infection persists after 7 days, insert an additional Utercap.

**Administration:** By hand or by use of balling gun.

**How Supplied:** In boxes of 3 Utercaps that bear tear label and full instructions. Four boxes of 3 in cardboard shipper.

**Expiration:** None. Should be kept in cool place, not exceeding 59 degrees F.

For further information, address E. R. Squibb and Sons, Dept. AVM-1, Veterinary and Animal Feeding Products Division, 745 Fifth Avenue, New York 22, New York.

\*"Novoxil" and "Utercaps" are trademarks of E. R. Squibb & Sons.

- A NAME YOU CAN TRUST

## Liability Insurance

for

## AVMA Members

The policy, which was developed especially for Association members two decades ago, provides expert defense against claims and suits arising out of the care and treatment of animals, and will pay, to the extent of the policy limits, all expenses and damages resulting from unfavorable verdicts.

In this suit-conscious age, such protection is not only wise but, as shown by the claim files, a practical necessity.

The insurance is placed with one of the largest and most reliable underwriters in the country.

Write at once for an application and descriptive folder, as the policy year begins on December 1.

### American Veterinary Medical Association

600 So. Michigan Ave., Chicago 5, Ill.

(CLASSIFIED ADS — continued from p. 48)

cellent opportunity. Address "Box P 21," c/o JOURNAL of the AVMA.

#### Wanted—Positions

European veterinarian, 35 years old, single, looking for position as assistant in small animal or mixed practice. Speaks English fluently. Address "Box P 6," c/o JOURNAL of the AVMA.

Veterinary student, 24 years old, wants summer employment between junior and senior year, which could lead to postgraduate opportunity. Interested in professional experience. Address "Box P 8," c/o JOURNAL of the AVMA.

European graduate with scientific background seeking employment in research or diagnostic laboratory. Address "Box P 7," c/o JOURNAL of the AVMA.

**WANTED POSITION**—leading to equal basis partnership, if both parties satisfied, in mixed practice located in the northeast or northwest. AVMA-accredited school, mixed practice experience, service status excellent. Would consider any position *except as straight assistant*. Address "Box P 9," c/o JOURNAL of the AVMA.

Assistantship wanted with busy, capable, general practitioner by coming June graduate. Prefer cattle-swine practice in Midwest, but will consider any locality. Now have B.S. in agriculture and considerable cattle background. Address "Box P 10," c/o JOURNAL of the AVMA.

Wanted assistantship with busy small animal practitioner, leading to lease, partnership, or purchase of practice. Capable of taking full charge. Address "Box P 18," c/o JOURNAL of the AVMA.

**WANTED**—contact with small animal practitioner who is interested in assistant, lease of hospital, or profit-sharing plan. Will graduate in June. Married, draft-exempt. Address "Box P 23," c/o JOURNAL of the AVMA.

D.P. veterinarian, graduate of Hannover veterinary school in Germany, with one year's experience, 30 years old, married, desires position as assistant in small or mixed practice. Address "Box P 24," c/o JOURNAL of the AVMA.

#### Wanted—Practices

**SUBSTANTIAL PRICE**—will be paid by thoroughly experienced practitioner for established small animal hospital in New York City or vicinity. Address "Box P 2," c/o JOURNAL of the AVMA.

**PRACTICE WANTED**—established mixed practice in eastern Pennsylvania, New Jersey, or Maryland.

(Continued on p. 55)



Send for FREE 36-page Treatise on  
**CARROT OIL VITAMINS**

Details the advantages of carrot oil vitamins when used in feeds to improve breeding results; to destroy oxidized milk flavors; and to promote general good health and glossy coats. Contains much information. Replete with data and references. Send for it today  
**NUTRITIONAL RESEARCH ASSOCIATES**  
Dept. 251-W, South Whitley, Indiana

land. Address "Box P 3," c/o JOURNAL of the AVMA.

**PRACTICE WANTED**—desire to purchase or lease with option to buy small animal practice in southern California or Arizona. Have licenses for both states. Address "Box P 16," c/o JOURNAL of the AVMA.

**PRACTICE WANTED**—established small animal practice wanted in metropolitan New York or New Jersey area. Substantial down payment offered. Will also consider assistantship with option to buy. Address "Box P 22," c/o JOURNAL of the AVMA.

#### For Sale or Lease—Practices

**FOR SALE**—large animal practice in western corn belt. Dense swine, beef, and dairy cattle area. Gross over \$40,000. Should net sale price in eight months. Address "Box P 11," c/o JOURNAL of the AVMA.

**NOTICE**—There were secretarial errors made in the inquiries to the following advertisement in the October JOURNAL. If you did not receive an answer, please write again.

Growing mixed practice in central California in one of the state's richest districts. Modern, completely equipped small animal hospital and extensive large animal practice. Two veterinarians can handle with small labor overhead. Gross \$48,000 in 1950, will increase in 1951. We will sell for \$40,000; limited terms available. Will stay with new owners a reasonable time. Address "Box M 18," c/o JOURNAL of the AVMA.

**FOR LEASE**—modern small animal hospital in Wisconsin, and mixed practice on a small monthly rental basis, rental to apply toward purchase price. Gross about \$25,000. Address "Box P 4," c/o JOURNAL of the AVMA.

#### Remittance must accompany order

**FOR SALE**—well-established large animal practice in south center Iowa—some small animal. Includes modern home and office building. For further information, address "Box P 13," c/o JOURNAL of the AVMA.

**FOR SALE**—small animal hospital in southwestern desert city. Large animal and race horse work available if wanted. Excellent year-round climate. No real estate. \$5,800. Address "Box P 12," c/o JOURNAL of the AVMA.


**FOR SALE**—mixed practice, central Michigan town, 80 per cent large animal. Price \$11,000. Eight-room house, office attached, large garage. Long established. Practice, one veterinarian town. Address "Box P 20," c/o JOURNAL of the AVMA.

#### Miscellaneous

Three keys on AVMA key ring No. 4914 found and returned to AVMA office, 600 S. Michigan Ave., Chicago 5, Ill., by U. S. post office. One key for Yale lock, two for Ford automobile.

(Continued on p. 54)

**TAMM** prophylactic  
aid  
to  
udder  
care!



**Udder Supports**

The TAMM Support provides three plus factors in udder care and treatment!

1. Positive protection against self-purking, stepping on teats, cuts, and bruising from fence wire, swamp reeds, stumps, etc., with the accompanying danger of infection.

2. Transfers the weight of heavy, swollen, or congested udders from strained muscles to the cow's back, preventing further breakdown.

3. Waterproof bag also serves as a container for medicinal solutions in which udder treatment can be extended at effective temperatures.

Available in four sizes — extra small (cows 900 lbs. or less), small (900 to 1100 lbs.), medium (1100 to 1600 lbs.), large (over 1600 lbs.).

ORDER today — \$17.00 retail. 30% professional discount. Write to Dept. 12-D for complete information!

**Franksville**  
*Specialty Co.*  
FRANKSVILLE • WIS.

**CASES**



for  
Serums and/or Instruments

**NEAT  
STURDY  
PRACTICAL**

Plywood Construction — covered with sheet steel — Black baked enamel finish. Brass trim, corner reinforcements — Full length and width tray for instruments or accessories — Ideal as "auto kit".

For further information  
write

**Nicholson Manufacturing, Inc.**  
2807 E. 3rd Ave.  
DENVER 6, COLORADO

## SIMONS DOG DRYER



### IMPROVED MODEL — 115 Volts

Over twice as much air. 1,100 cubic feet per minute blowing over 2,500 watts of heating elements. Thermostat heat control. Improves drying time greatly. Cocker — 20 to 30 minutes. Collie — 40 to 45 minutes. All transparent plastic doors. Center partition pulls out for large dogs. Don't go through another winter without a Simons Dryer. \$345.00 f.o.b. Baltimore.

Write for Dryer folder also cage booklet

**Baltimore Wire & Iron Works**

514 N. Jasper Street, Baltimore 1, Maryland

(CLASSIFIED ADS — continued from p. 53)

## Books and Magazines

Sketches of purebreeds—get at \$1 (3 for \$2) **CHART OF ALL AMERICAN BREEDS.** Keep up on dogs with *Dog World* magazine, \$3 a year. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16, Ill.

## For Sale—Artificial Insemination Supplies

### ARTIFICIAL INSEMINATION INSTRUMENTS

—Standard and custom made essential equipment and supplies. Sulfacitrate buffer tablets. Disposable plastic inseminating tubes, sterilized, \$1.00 per package of twenty. Address Breeder's Equipment Co., Flourtown, Pa.

## Informed Advice

A youngster considering a career in veterinary medicine against a relative's wishes got this advice from Capt. Will Judy, editor of *Dog World*: "Standards of the veterinary profession have gone up tremendously in the last twenty years. Now, the highest technical education is required to gain the title of Veterinary Doctor; it is one of honor and achievement. . . I hope you will not give up the idea of entering the profession. . ."

## The original formulation for estrogen- during-estrus therapy



The tested and proved  
conception aid for  
low fertility cows

# DINOVEX



**NOW** also found effective in brood mares!

It shortens duration of heat in the mare, brings ovulation closer to service, saves the stallion by eliminating wasted services.

Investigate DINOVEX—send for literature giving more detailed information on the use of DINOVEX in cows and mares.

DINOVEX is available to veterinarians only, through veterinary supply houses.

## Veterinary Division

**ORTHO PHARMACEUTICAL CORPORATION, Raritan, N. J.**





**NEW!**

a long-acting local anesthetic  
for epidural (caudal) anesthesia  
of cattle.

# CYCLAINE® Veterinary

HEXYLCAINE HYDROCHLORIDE

A new local anesthetic which gives you these advantages:

**LONGER DURATION OF ACTION**—Up to 8.8 hours average duration. Longer period of anesthesia than was observed with procaine or tetracaine.<sup>1</sup>

**WIDER MARGIN OF SAFETY**—Therapeutic ratio of 584 for CYCLAINE® compared to 54 for cocaine and 353 for procaine.<sup>2</sup>

**PARTICULARLY FOR EPIDURAL ANESTHESIA**—Animals remain in standing position. Anesthetizes pelvic organs so that it is possible to manipulate or to conduct procedures without evidence of straining or pain. Low in cost.

CYCLAINE (Veterinary), Sterile Solution Hexylcaine Hydrochloride 5% available in 20 cc. rubber-capped vials.

#### REFERENCES

1. Roberts, S.J., J.Am.Vet.M.A. 116:282, Apr. 1950.
2. Beyer, K.H., et al., J.Pharmacol.&Exper.Therap. 93:388, Aug. 1948.



**SHARP & DOHME • VETERINARY DIVISION**  
Philadelphia 1, Pa.

# Introducing

## HAVOSEPT

A new four-way germicidal  
detergent and deodorizing  
lubricant



Havosept is ideal for use as a lubricant for vaginal and rectal examinations and for obstetrical procedures.



double duty

### HAVOSEPT

germicidal  
action plus  
effective  
cleansing

Havosept is a free flowing antiseptic detergent with deodorizing and lubricating qualities. As a lubricant it reduces friction against mucous membranes while, at the same time, it protects the practitioner against infection. If used regularly — Havosept prevents growth of skin bacteria and its pH is adjusted to that of the skin, thus practically excluding the possibilities of irritations. Havosept is handy to use and has shown no harmful effects upon rubber gloves and equipment.

Supplied in: 8 oz. shaker-top bottles.

*Haver-Glover Laboratories*  
*Kansas City, Mo.*

# DUAL PROTECTION!

RESULTS OF CONTROLLED  
EXPERIMENTS INDICATE THAT

*Anti-Canine  
Distemper Serum*  
(LOCKHART)

ALSO CONFERS PASSIVE  
IMMUNITY TO

*Infectious  
Canine Hepatitis*

Newer knowledge of the widespread prevalence of infectious canine hepatitis (Rubarth's disease) and its highly contagious characteristics suggested an urgent need for a protective agent.

■ ANTI-CANINE DISTEMPER SERUM (Lockhart) as produced during 1949, 1950 and 1951 gave complete protection against lethal doses of the virus of infectious hepatitis; litter mates of test puppies (not protected) succumbed on exposure.

These controlled experiments adequately prove the value of Anti-Canine Distemper Serum (Lockhart) when administered at the rate of 0.5 cc per pound body weight. In addition to its superiority as a prophylactic and therapeutic agent against canine distemper (virus of Carré) it protects dogs which may be exposed to infectious hepatitis.

Available at no increase in price ..... 100 cc—\$6.00

(Explanatory folders of test procedures and results are available.)

**ASHE LOCKHART, INC.**

"Producers of Better Biologicals for Graduate Veterinarians"

800 Woodswether Road

Kansas City, Missouri

Jen-Sal  
announces  
a new and better  
veterinary  
sulfonamide

# SULFACIN

3, 4-dimethyl-5-sulfamido-isoxazole

*It's ready now! Sulfacin* should prove to be the finest veterinary sulfonamide yet developed . . . for it has broader bacteriostatic action than combined sulfas or some antibiotics! Better still, *Sulfacin* (Jen-Sal) is non-toxic, non-irritant, and so soluble that there is no danger of renal damage. It gives double the bloodlevel concentration, and for much longer periods than many other sulfonamides.

We are packing *Sulfacin* for you now in: bottles of 100-5 grain tablets, bottles of 50-40 grain tablets, packages of 10-207 grain boluses, and gallon bottles of 6.25% solution (oral). Order a trial supply today.

Jensen-Salsbery Laboratories, Inc.  
Box 167 Kansas City 10, Missouri